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117

THE Refrigeration Industry

INSTALLATION
MAINTENANCE
MERCHANDISING

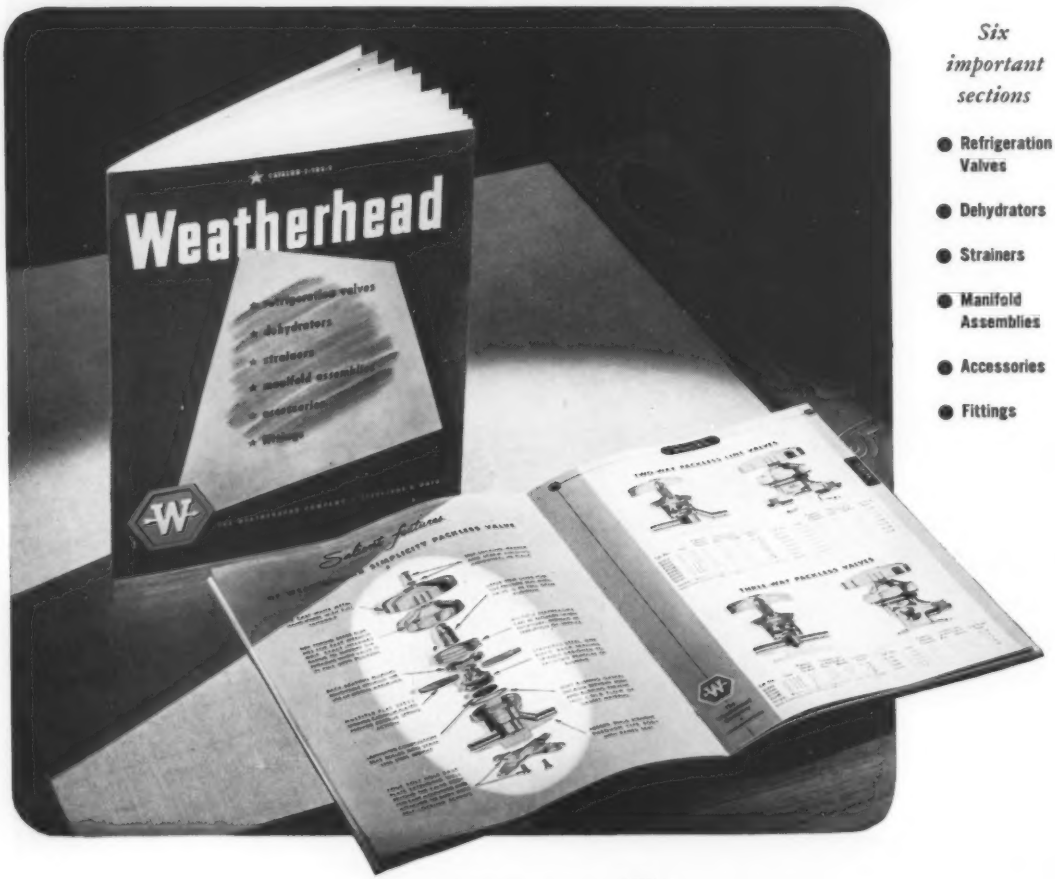
AIR CONDITIONING
MACHINERY

NOVEMBER, 1945

Circulation of This Issue 21,382

Every refrigeration man needs this new catalog!

Designers, engineers, service-men, purchasing agents—every key department head in the refrigeration field—should have this new Weatherhead Refrigeration Catalog. It gives you at a glance detailed, illustrated data on the multitude of *improved* refrigeration parts Weatherhead engineers have designed and created for original installations and replacement work. Write or call one of our branch offices for a free copy of this 40-page catalog.



Six important sections

- Refrigeration Valves
- Dehydrators
- Strainers
- Manifold Assemblies
- Accessories
- Fittings

Look Ahead with

Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO
Plants: Cleveland, Columbia City, Ind., Warsaw, Ind., Los Angeles
Canada—St. Thomas, Ontario

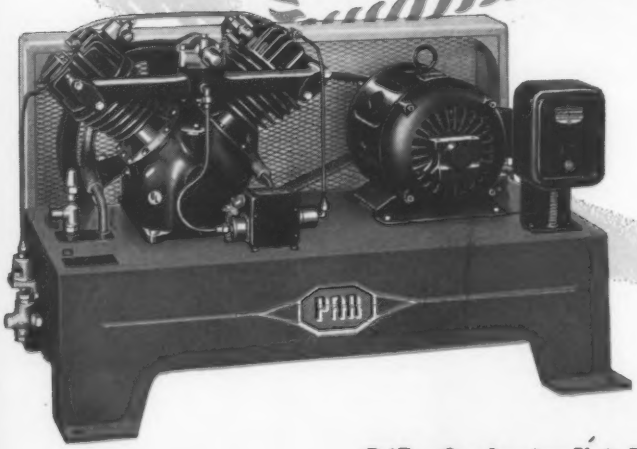
BRANCH OFFICES: NEW YORK • PHILADELPHIA • DETROIT • CHICAGO • ST. LOUIS • LOS ANGELES

PAR Gives "BLANKET COVERAGE"

in Models and Sizes for Economical, Efficient Refrigeration

FROM 1/6 TO 5 H.P.

PAR BY Lynch



YOUR Par Jobber has Complete details on the Par line of Condensing Equipment. See him for full information or write for Par catalogue R-96 and supplement R-96A.

PAR—Condensing Unit Line sold exclusively through Franchised Refrigeration Supply Jobbers!

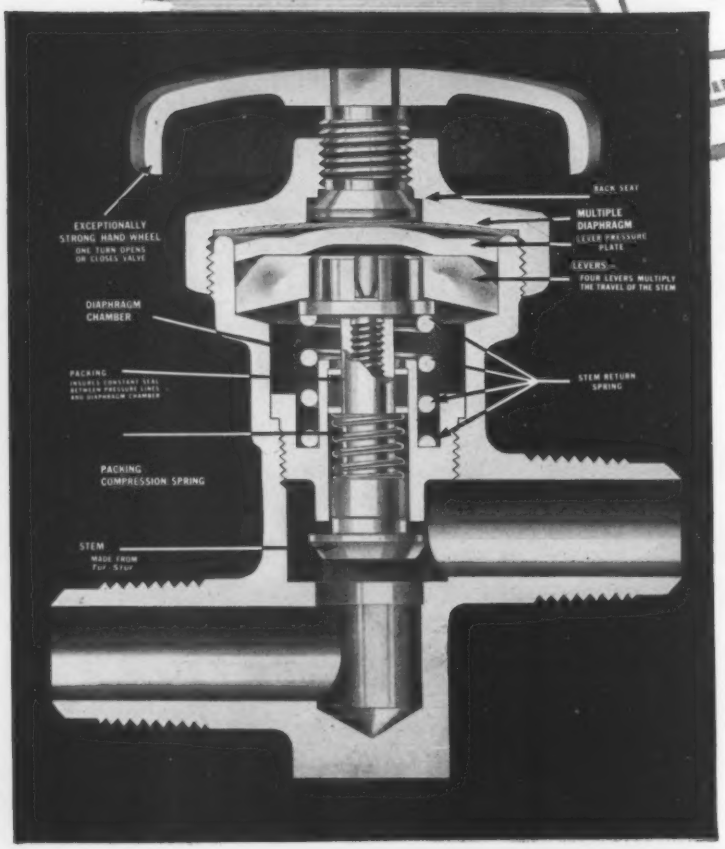
PAR Lynch DIVISION

. . . By Comparison — You'll Buy PAR

Manufacturing Corporation, Defiance, Ohio U. S. A.

Increased...

DIAPHRAGM LIFE PROLONGS THE SERVICE LIFE OF THE VALVE



Because of the small amount of movement, the multiple diaphragm in our TRIPL-SEAL Valve is never deflected past its normal center; thus immeasurably prolonging both its life and the life of the valve in service.

The multiple diaphragm has approximately 20% increased surface area over more conventional types of diaphragms. A single turn only is necessary to open or close the TRIPL-SEAL Valve.

TRIPL-SEAL

Positive sealing at three essential points in the valve is adequately provided for—a back seat with valve in open position,—the multiple diaphragms,—and a packing around the stem. (This packing insures constant seal between pressure lines and diaphragm chamber.)

The stem of the TRIPL-SEAL Valve is provided with a sixty degree bevel, thus procuring the most desirable wedging action for positive and easy closing. It is manufactured from Tuf-Stuf, a strong, corrosion-resistant alloy.

The stem does not rotate, and is constantly guided into the same position against the seat by a cylindrical guide, so processed as to eliminate any possibility of distortion.

The body and cap of the valve are forged brass to eliminate seepage and to withstand frost action; mounting lugs are forged integrally with the body to provide the ultimate in mounting strength.

The hand-wheel is exceptionally strong, and is so designed that it provides a convenient grip for manual operation.

Valves are furnished in two-way, three-way, and angle type—flared or solder type ends—and in complete range of all necessary sizes.

Order through your jobber.

MUELLER BRASS CO.

PORT HURON, MICHIGAN

ORDER THROUGH YOUR JOBBER... ONE SOURCE OF SUPPLY... SAVES YOU TIME AND MONEY

25 lb. pail illustrated.

The Ideal Dehydrant for Refrigerants

JAY CEE refrigeration gel is one of the most efficient dehydrating agents. It is especially prepared for dehydration of refrigerants, and may confidently be used for drying Freon, Methyl Chloride, Sulfur Dioxide or any other similar agent. Removes acids, prevents rust or corrosion and is not affected by oil. The special particle size retains its crystalline structure — assuring uniform distribution in the cartridge and complete contact with all pore surface areas.

We offer you this economical 25-lb. container with resealable Easy-Pour spout. Dehydrators can easily be filled from this Easy-Pour container, and resealed to protect unused contents until needed. Special gasketed cover makes Easy-Pour container air-tight when not in use.

There are excellent opportunities for jobbers and distributors to develop profitable business on Jay Cee Silica Gel in a few territories. Write for details.

JOLIET CHEMICALS, LTD., INDUSTRY AVENUE, JOLIET, ILLINOIS

JAY CEE

SILICA GEL

A superior dehydrant

PIONEERED IN THE WEST!

Heat Exchange Equipment Sets New Performance Records

d-h engineers have designed and manufactured a complete line of heat transfer equipment whose performance in service is setting new high standards of excellence throughout the country. Included are heaters, coolers, air conditioning equipment coils... each with outstanding qualities that invite comparison.

They represent more than a generation of Western development. Into every d-h unit go thorough knowledge of heat exchange principles... expert designing for proper proportion and balance... experience in manufacturing quality products with the finest factory facilities.

Busy meeting war needs today? Certainly... but not **too** busy to help you solve your heat exchange problem for tomorrow. Perhaps your answer is ready and waiting... perhaps only minor adaptation of standardized equipment is necessary. Write us about your needs.

SPASAVER
Horizontal type air cooler first introduced by d-h

HEXHEAT
Airplane exhaust heater a leader in its field

STRATA-FLO
Revolutionary type water cooler of unequalled efficiency

WAT-R-MISER
Evaporative liquid cooler that eliminates nine tenths of ordinary operating costs

LOS ANGELES d-h SINCE 1910

drayer-hanson INC.

738 EAST PICO STREET • LOS ANGELES 21, CALIFORNIA

THE FIRST AND ONLY FACTORY OF ITS KIND IN THE WEST WITH COMPLETE FACILITIES FOR ENGINEERING, DESIGNING, MANUFACTURING, HEAT EXCHANGE EQUIPMENT

THE Refrigeration INDUSTRY

VOLUME 2, No. 11

NOVEMBER, 1945

The Refrigeration Industry

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THE COVER . . . This Thanksgiving Day, all of us have more than ever to be thankful for—but the packers and processors who bring the big Toms to our tables can be thankful the year around that modern refrigeration equipment has contributed so much to the growth of their industry. (Acme Photo.)

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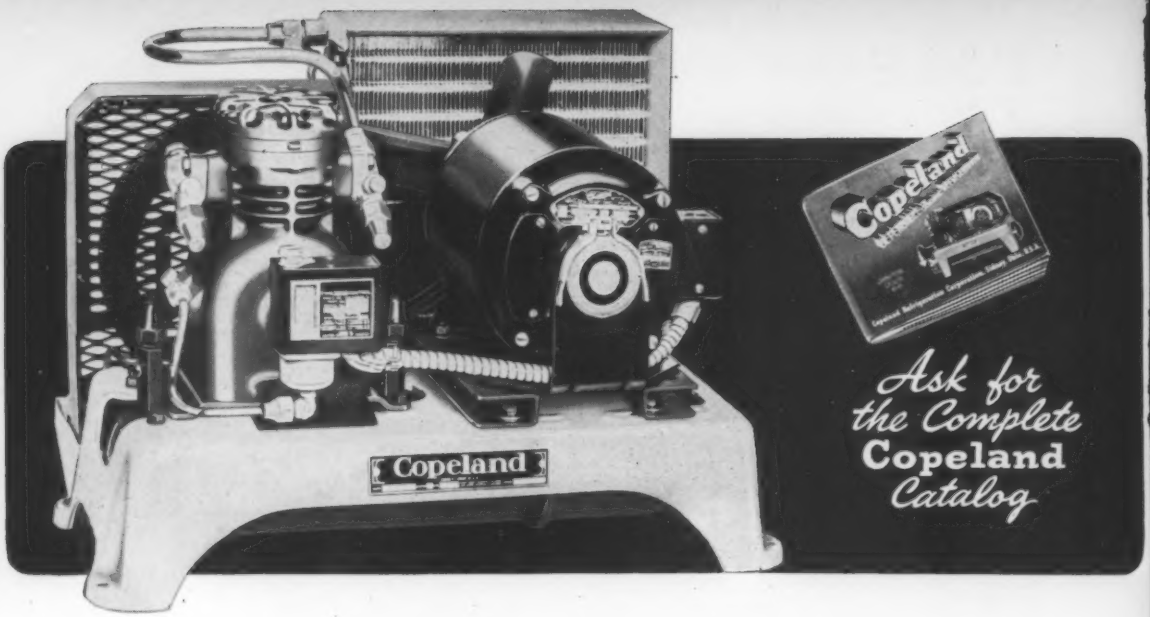
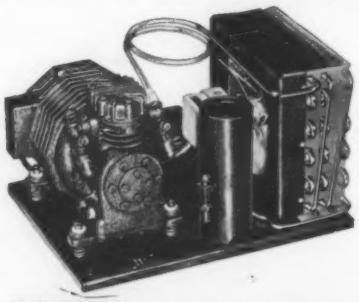
CCA



The wise jobber values the confidence his trade has placed in him. Many a man has spent years in building a business reputation he can ill-afford to risk. Little wonder then, that so many reputable firms of long standing recommend and sell **Copeland** *Electric Refrigeration. They have learned to look upon this complete and dependable line as the backbone of their very profitable refrigeration business. They know that every* **Copeland**

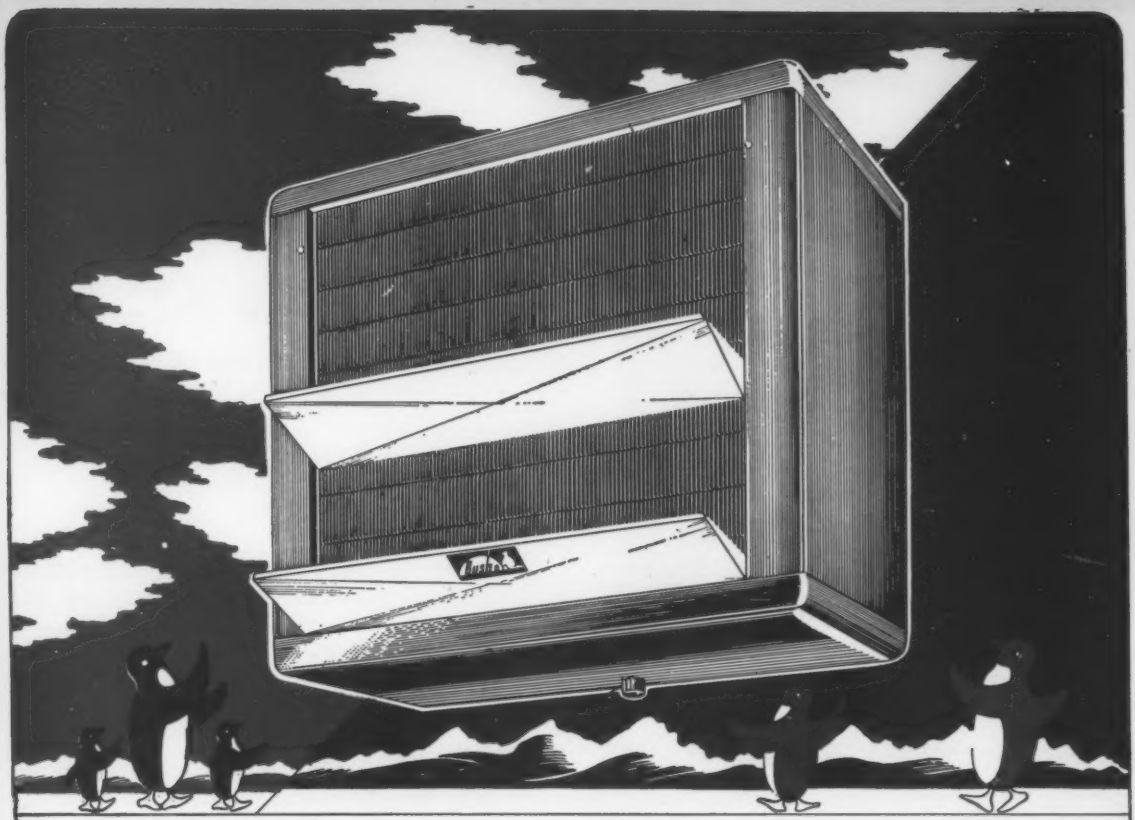
DEPENDABLE *Electric* REFRIGERATION

installation has the complete backing of a corporation with 26 years' experience in electric refrigeration.



COPELAMETIC The Accessible Hermetic . . . combines all the good features of welded-in hermetics and open-type units. Copelametic has no belt—no seal—no manual oiling.

COPELAND REFRIGERATION CORPORATION, SIDNEY, OHIO



Bush STANDARD UNIT COOLERS

Bush Standard Unit Coolers have established an enviable reputation for dependability and low cost operation. New streamlined models feature casings of non-corrosive steel, finished in crackled gray, with rounded corners. There is a size for every purpose — 250 to 1800 BTU capacity. Low speed motors and kidney type fan blades assure minimum wear and noise. A well built, sturdy product unexcelled for efficient operation. Write for new Bush Catalog which illustrates and describes the Bush Standard Unit Cooler . . . and other Bush Heat Transfer Products. For advanced engineering . . . buy BUSH.

Heat Transfer Products by **BUSH**

Part of Century's Complete Line of Air Conditioning Motors

BUILD MORE CUSTOMER GOOD WILL

with CENTURY'S COMPLETE LINE

of Air Conditioning Motors

The complete line of Century Motors includes a wide range of types and sizes to meet the requirements of every air conditioning need. That gives you one source for all your motors — makes your buying job easier.

These motors provide your customers with air conditioning comfort — and create more good will for you — because they operate smoothly and quietly. Many features such as rigid construction, mechanical and electrical balance, contribute to the better performance of Century Motors.

Get the complete story on all the advantages of Century Motors — call in a Century engineer. His experience may prove valuable to you.

CENTURY ELECTRIC CO.
1806 Pine Street, St. Louis 3, Missouri

Split Phase Induction Motor — Built in sizes 1/20 to 1/4 horsepower

Capacitor Single Phase Induction Motor — Built in sizes 1/20 to 3/4 horsepower

Squirrel Cage Polyphase Induction Motor — Built in sizes from 1/8 to 600 horsepower

Capacitor Motor — Built in sizes from 1 to 20 horsepower

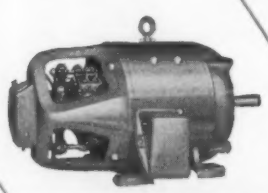
Century C MOTORS

Offices and Stock Points in Principal Cities

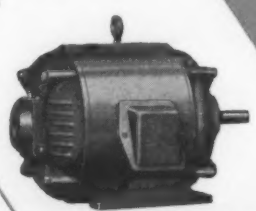
Slip Ring Motor—Built in sizes from 1 to 200 horsepower

Repulsion Start Induction Motor —Built in sizes from 1/2 to 3/4 horsepower

Direct Current Motor—Built in sizes 1/20 to 3/4 horsepower

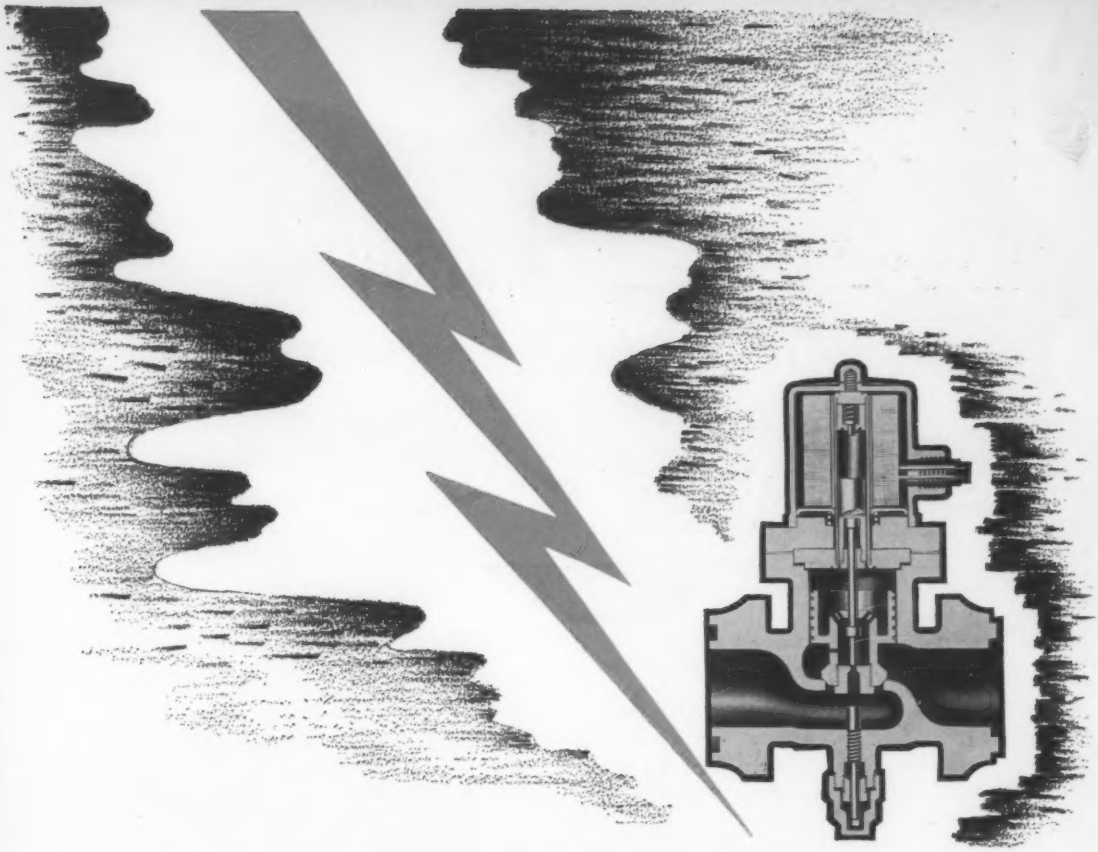


Direct Current Motor—Built in sizes from 1 to 300 horsepower



Repulsion Start Induction Motor — Built in sizes from 1 to 20 horsepower

439



ALCO SOLENOID VALVES AUTOMATICALLY RESPOND WITH LIGHTNING SPEED

They are electrically actuated by the temperature of the medium to be cooled and respond instantly. Therefore, Alco Solenoid Valves provide split-second flow control of refrigerants.

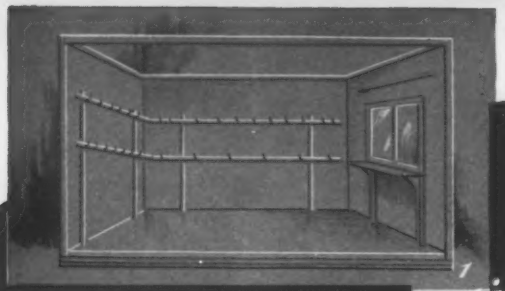
They are dependable under the most adverse conditions: heat, cold, moisture or fluctuating current. For complete data, send for our Solenoid Bulletin.

ALCO SOLENOID VALVES

ALCO VALVE CO.

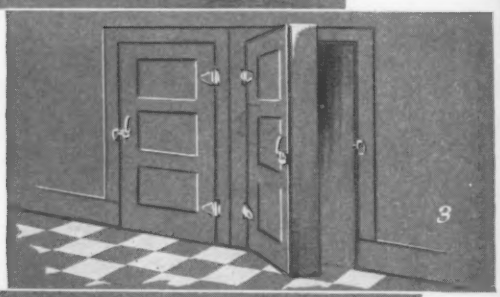
855 KINGSLAND AVE. • ST. LOUIS 5, MO.

Designers and Manufacturers of Thermostatic Expansion Valves; Pressure Regulating Valves; Solenoid Valves; Float Valves; Float Switches.



A line full of potential profits . . .

a sales policy to help you realize them



IF YOU are established in the refrigeration field, you will be quick to recognize the potential profit in the products illustrated here, for you know the demand among your customers for a *quality* line of this type.

The Albert H. Bromann Jr. policy of selling only through recognized, established refrigeration outlets protects this profit for you. No product of the Albert H. Bromann Jr. organization will be sold direct to users at any time or under any circumstances.

Our reconversion from war assignments will shortly be achieved with the completion of our new plant. The experienced engineering and skillful workmanship that have always gone into the building of our products will assure even finer quality under improved manufacturing conditions.

Custom Built Products — *Complete Cooling Rooms; Cabinets for Industrial and Commercial Freezers*

Standard Products — *Cold Storage Doors; Direct Draw Beer Dispensers*

If you are interested in handling one of the outstanding quality lines in the refrigeration field on a basis that insures substantial and protected profits, we cordially invite you to get in touch with us.

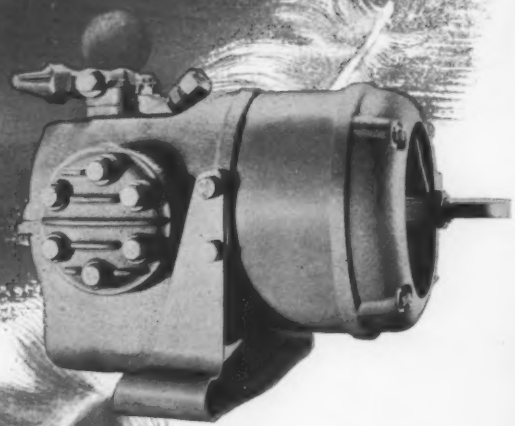
SERVING THE REFRIGERATION INDUSTRY

ALBERT H. BROMANN JR.

GENERAL OFFICES: 4822 WEST CHICAGO AVENUE • CHICAGO 51, ILLINOIS

Mills direct drive compressors

TOMORROW, YOUR CONDENSING UNITS WILL *weigh less*



*The new Mills 1/3 H. P. Direct Drive Compressor * is 37% lighter than conventional belt-driven units of the same rating. Requiring less weighty support structures, they will measurably reduce your manufacturing costs.*

*
When available, initial production necessarily will be limited.
Even if we cannot supply your needs for some time, we will be happy to help you plan your future cabinets around these weight-saving units.

MILLS *Industries, Incorporated*

Refrigeration Division

4100 Fullerton Avenue · Chicago 39, Illinois

Wagner Motor Service

from Coast-to-Coast . . .

WAGNER ELECTRIC CORP.
AUTHORIZED
Electric Motor Repairs & Service
GENUINE WAGNER PARTS

Wagner electric motors seldom need servicing because they are designed and built to give years of dependable, troublefree service. But when service *is* needed, users of Wagner motors find our coast-to-coast motor service quick, convenient, and efficient. This service means savings of time, effort, and expense.

The map, pictured above, shows Wagner's nationwide facilities. The stars indicate Wagner Service Branches where, in addition to regular service repairs and parts being available, factory-trained engineers are ready to help you with your toughest motor problems. The triangles represent Wagner Authorized Electrical Service Stations where motor repairs can be taken care of. The dots indicate the location of Wagner Authorized Electrical Parts Distributors where genuine Wagner motor parts for replacement are available.

Pictured at right is one of Wagner's branch motor repair shops in operation —this one at the Detroit Service Branch.

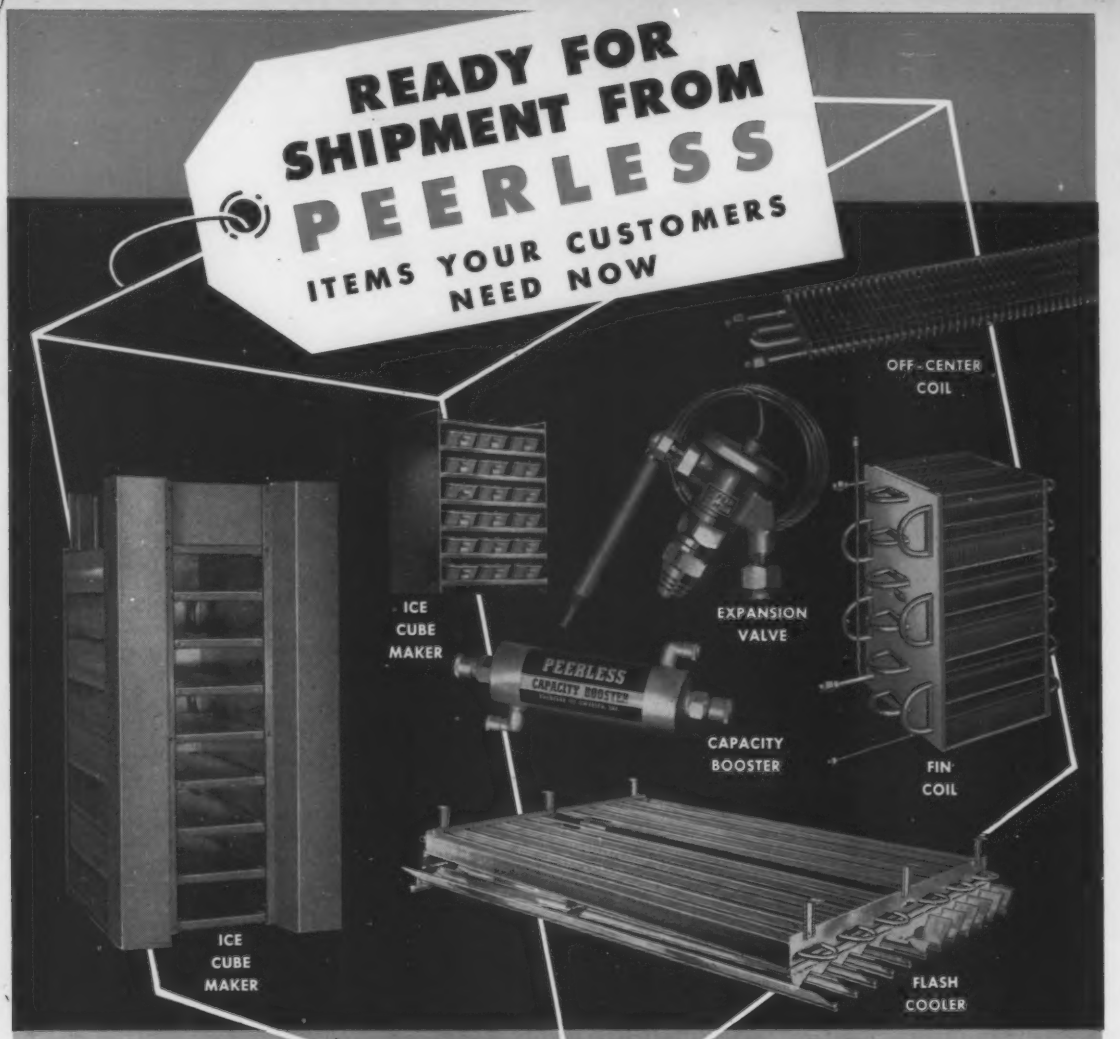
MOTORS
are but one of several
WAGNER PRODUCTS
serving industry.

Other WAGNER PRODUCTS:
AIR BRAKES
•
BRAKE LINING
•
HYDRAULIC BRAKES
•
INDUSTRIAL BRAKES
•
INDUSTRIAL BRAKE CONTROLS
•
NoRol
•
TACHOGRAPH
(Recording Speedometer)
•
TRANSFORMERS

M45-22

Wagner Electric Corporation

ESTABLISHED 1891
6442 Plymouth Avenue, St. Louis 14, Mo., U. S. A.
In Canada: Wagner Electric at Leaside, Ontario
ELECTRICAL AND AUTOMOTIVE PRODUCTS



Send your order TODAY - for IMMEDIATE delivery!

PEERLESS Flash Tube Coils, Deluxe Flash Coolers, Capacity Boosters, Ice Cube Makers, Off-center Coils, and Thermal Expansion Valves -- all coming off the production line in quantities ready for shipment to you! PEERLESS' superior quality -- still further developed by precision engineering and manufacturing during an outstanding plant war record, insures you the best possible product in the refrigeration field. Buy PEERLESS products -- products of known leadership!

PEERLESS OF AMERICA, INC.

Factory, MARION, INDIANA, U. S. A.

EXECUTIVE and GENERAL SALES OFFICES

333 N. MICHIGAN AVENUE, CHICAGO 1, ILLINOIS, U. S. A.

THIS USER KNOWS

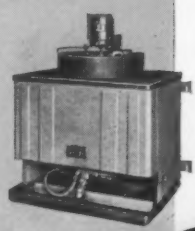
Max Weisberg of Jo-Mac Super Market, St. Louis, Missouri, says — I have used an AMCOIL FOOD CONDITIONER in my cooler for some time and know it helps to retain the natural freshness and bloom of the meats. I have never had any losses through trimming of meats, thanks to AMCOIL'S definite control of humidity which practically eliminates dehydration and shrinkage.

UTILITY DOWN-DRAFT UNITS

Specially designed to meet the demands for a compact, efficient, wall-mounted unit.

Model	BTU/HR 15° MTD	List Price
UD- 7	1,350	$ 89.00
UD- 17	2,250	99.00
UD- 27	3,000	109.00
UD- 37	4,200	129.00
UD- 47	5,600	149.00
*UD- 57	7,800	169.00
*UD- 77	11,000	209.00
*UD-127	15,000	319.00
*UD-167	23,000	369.00

*WITH HEAT EXCHANGER
Expansion Valves and Controls not included in list prices.



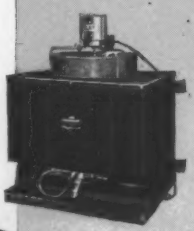
AMCOIL NOW FEATURES

The new moderately priced utility cooling units, namely:—

The UDF Food Conditioners for preservation of fresh and perishable foods where the control of high humidity is a factor, and the regular UD models for the storage of package commodities.

UTILITY FOOD CONDITIONER

A low-priced unit which ideally supplements the Amcoil DeLuxe model.



Model	BTU/HR 15° MTD	List Price
UDF- 19	1,950	$139.00
UDF- 29	2,700	149.00
UDF- 39	3,900	179.00
UDF- 49	5,300	199.00
*UDF- 59	7,500	219.00
*UDF- 79	10,700	259.00
*UDF-129	14,000	374.00
*UDF-169	22,000	434.00

*WITH HEAT EXCHANGER
Humidifier included in list prices; valves, controls, etc., extra.

Streamlined, wall-mounted, down-draft unit for back-bar or under-counter coolers, reach-in and walk-in boxes. A space-saver supreme! Field-tested, and consumer-acceptance proved!

JOBBERS—DEALERS investigate these latest AMCOIL profit makers

Big sales opportunities for dealers in this low-priced unit that combines many features of the De Luxe Food Conditioner. For high relative humidities up to 85%, and temperatures down to 36° F.

STEP UP YOUR SALES AND PROFITS WITH THESE NEW AMCOIL MODELS

DE LUXE FOOD CONDITIONER

A complete refrigeration system, except for condensing unit, which automatically preserves food without dehydration or shrinkage in Reach-In and Walk-In Coolers.

Model	BTU/HR 15° MTD	List Price
FC- 50	7,500	$233.00
FC- 80	11,300	378.00
FC-130	17,000	601.00
FC-160	22,600	641.00

ALSERVICE REACH-IN PANEL UNIT

A compact cooling unit for all refrigeration applications. Designed to meet a growing demand for medium-capacity units to balance condensing units of ¼, ⅓, ½ or ¾ hp. Especially suited for reach-in and small walk-in boxes where temperatures of 36° F. are required.

Model	BTU/HR 15° MTD	List Price
RI-15	2,000	$ 94.00
RI-205	3,600	129.00
RI-25	2,250	99.00
RI-30	3,000	114.00
RI-40	5,250	149.00
RI-45	6,150	169.00

CEILING MOUNTED TWO-WAY MODEL UW UNITS

Discharges cooled air in two directions distributing it evenly over entire cooler.

Model	BTU/HR 15° MTD	List Price
UW-29	2,200	$129.00
UW-39	3,200	160.00
UW-49	4,500	190.00
UW-59	5,800	204.00
UW-79	9,000	235.00

DISTRICT OFFICES

Philadelphia Office: M. H. McTurk, Mgr. 3510 Spring Garden Street

Chicago Office: H. C. Moore, Mgr. 213 W. Ontario Street

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William D. Keefe, Chaffee, New York
E. J. Oliphant & Co., 505 Uhler Bldg., Marion, Ohio
Jordy Engineering Co., Inc., 813 Howard Ave., New Orleans, La.
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Ernest Darwin Corporation, P.O. Box 2654, Charlotte 1, North Carolina

AMCOIL

AMERICAN COILS CO.

25-27 LEXINGTON STREET - NEWARK 5, N. J.

Only Henry makes a Diaphragm Packless Valve that is

NON-DIRECTIONAL

● Experience has taught the refrigeration industry that in a Henry Product it can always reasonably expect some extra value and a better feature of design and construction. The Henry Packless Valve is an outstanding example.

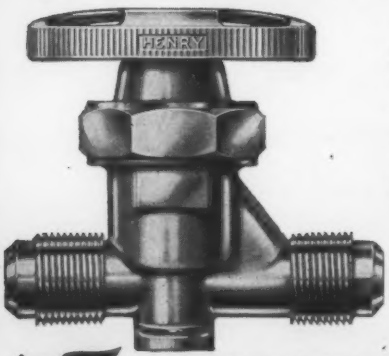
By means of a patented balancing channel in the lower valve stem, explained in detail below, the Henry Diaphragm Packless Valve cannot stick shut regardless of the pressure differential above or below the valve seat. When using a conventional valve, there is always the possibility that a valve installed in reversed position could fail to open if sufficiently high pressures should develop above the seat. The Henry Diaphragm Packless Valve, however, can be relied upon to give positive performance under all conditions of service because it is truly non-directional.

You will also like the Henry feature of having inlet and outlet ports in line on two way and three way valves. This eliminates tube bending and results in neater lines and lower installation costs.

During the war Henry Diaphragm Packless Valves have been widely favored by all branches of the armed services. It is only natural that, as our country gradually turns to the problems of Peace, this Henry Product again will be the logical choice of manufacturers, jobbers, contractors and service organizations everywhere.

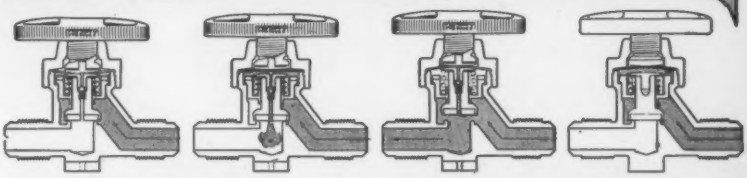
The Difference Between a Henry *Non-Directional Balanced-Action Diaphragm Packless Valve and a Conventional Packless Valve*

Available in a complete range of sizes with flare or solder connections.



ARMY-NAVY

SOLD BY JOBBERS



BALANCED-ACTION VALVE IN CLOSED POSITION—High pressure above the seat, low pressure below the seat. High pressure regions are shown in color. Pressure in spring cage below diaphragms is the same as that in main passage of valve body above the seat. This is due to seepage between the lower stem and the guide. Downward pressure of the bearing plate on the diaphragms seals the upper port of the balancing channel.

OPENING THE BALANCED-ACTION VALVE—As hand wheel is turned to open valve the diaphragms, because of pressure beneath them and their own snap action, rise and expose the upper port of the balancing channel. The high pressure, shown in color, unseats ball check and is instantly released through the open channel to the low pressure region below the valve seat, thus achieving "balanced-action" by equalizing pressures.

BALANCED-ACTION VALVE IN FULL OPEN POSITION—Equalization or balancing of pressures above and below the seat, as shown in color, guarantees that this valve can never "stick shut" but will always open positively, regardless of original differential in pressures. When there is high pressure below the seat and low pressure above, the balanced valve opens easier than other types because of the light weight spring.

CONVENTIONAL TYPE WITHOUT BALANCED-ACTION.—As hand wheel is turned to open valve the diaphragms rise. When the differential between high pressure, shown in color, above seat and low pressure below seat is greater than force exerted by heavy spring, stem "sticks shut"—valve remaining closed. The heavy spring required in this type of valve greatly increases diaphragm wear and strain and causes stiff closing.

HENRY VALVE COMPANY

HENRY VALVE CO.

3260 WEST GRAND AVENUE, CHICAGO 51, ILLINOIS

PACKLESS AND PACKED VALVES · STRAINERS · DRYERS FOR REFRIGERATION AND AIR CONDITIONING
AMMONIA VALVES · FORGED STEEL VALVES AND FITTINGS FOR OIL, STEAM AND OTHER FLUIDS

Mr. Dealer... Mr. Service Engineer!

...have you ever stopped to think how *You* profit by dealing with your nearest Sporlan Jobber?

1st ... he has the merchandise you need in stock at all times ... a ready source of supply.

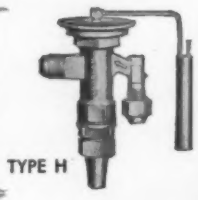
2nd ... he can give you valuable engineering advice ... he has the manufacturer's scientific data at his finger tips.

3rd ... he can save you valuable time on many a job because his stock is local.

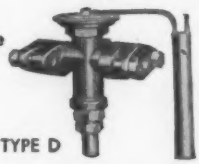
And, best of all, you know that Sporlan products have always been available through the jobber and always will be ... not here today, and gone tomorrow.

DROP IN ON HIM TODAY and check over these Sporlan products with him. You'll find the time spent mutually profitable!

SPORLAN
manufactures the only
THERMOSTATIC EXPANSION VALVES
with Selective Charges

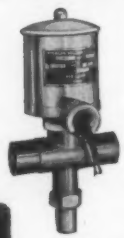

TYPE H

Up to 50 tons	Freon 12
Up to 100 tons	Methyl Chloride
Up to 10 tons	Sulfur Dioxide
Up to 100 tons	Ammonia
Up to 20 tons	Freon 22


TYPE D

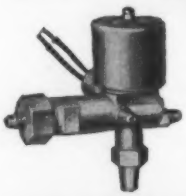
SPORLAN
Peak Performance Liquid Line Solenoid Valves

QUIET IN OPERATION
TIGHT CLOSING
RUGGED



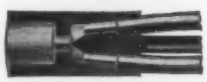
Up to 20 tons	Freon
Up to 40 tons	Methyl Chloride
Up to 6 tons	Sulfur Dioxide
Up to 40 tons	Ammonia

SPORLAN
Solenoid Pilot Controls used in place of large capacity Liquid Line Solenoid Valves

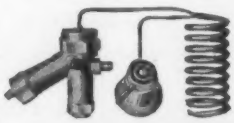


More economical in initial, installation and operating costs than a large liquid line Solenoid Valve on loads of more than 10 tons Freon 12 and 20 tons Methyl Chloride.

SPORLAN
REFRIGERANT DISTRIBUTORS



The Sporlan Refrigerant Distributor is an efficient device for multi-circuit evaporators. It evenly distributes liquid refrigerant to any number of circuits from 2 to 24.



SPORLAN
MODULATING PILOT CONTROLS ... A self actuated temperature control device used in conjunction with Thermostatic Expansion Valves.

SPORLAN TF VALVES

For Peak Performance on all installations ... always specify **SPORLAN**

SPORLAN VALVE COMPANY

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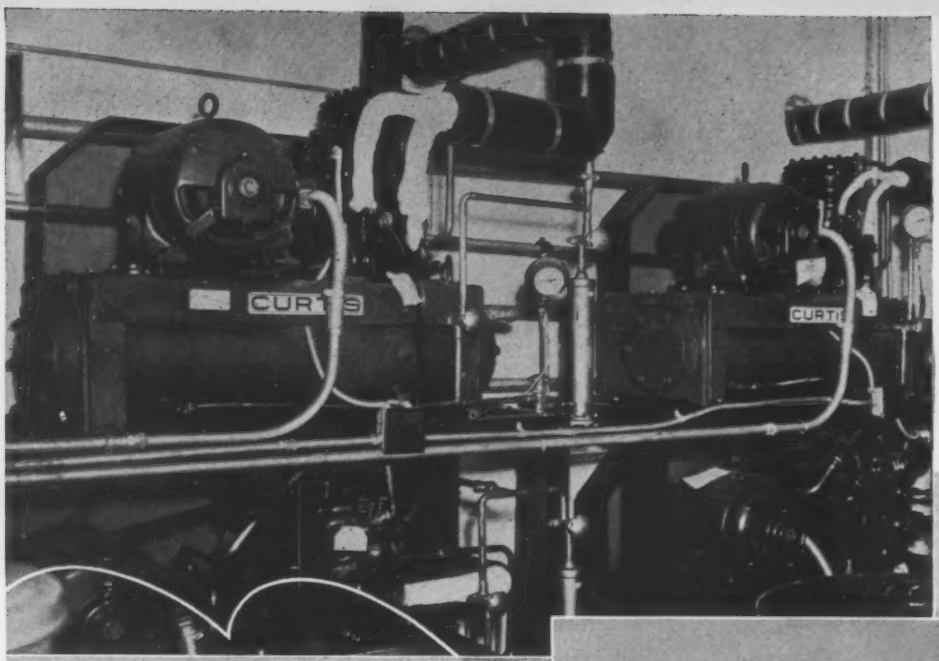


At Left: A part of the Curtis Compressor equipment serving the refrigerating requirements of the plant.

Below: Exterior of locker plant — 830 lockers.

CURTIS REFRIGERATION *- Is the Heart* of This Efficient LOCKER PLANT

Refrigeration dealers can not only profit by constructing new locker plants, but there is profit to be gained in rebuilding and modernizing plants that are not adequately refrigerated or insulated. In many locker plants throughout the country, CURTIS Refrigerating Units are proving the answer to the demand for dependable, efficient, trouble-free performance throughout an exceptionally long machine life.

3 and 5-ton Packaged-Type Air Conditioner.

Ask about Curtis Air-Conditioning Equipment, too.

WRITE FOR COMPLETE STORY ON THIS UP-TO-DATE CURTIS-EQUIPPED LOCKER PLANT

Bulletin RX-3 will be mailed on request

CURTIS REFRIGERATING MACHINE DIVISION
of Curtis Manufacturing Company
1915 Kienlen Avenue • St. Louis 20, Missouri

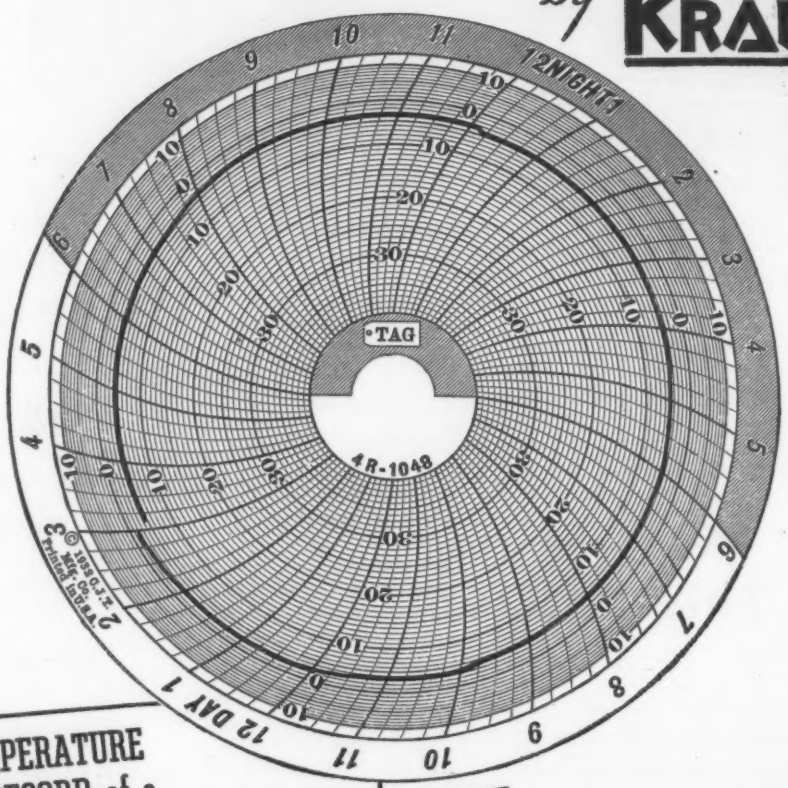
CURTIS REFRIGERATION AIR CONDITIONING AND COMMERCIAL

B-456

FOR VICTORY BUY MORE WAR BONDS AND STAMPS

THERMOBANK

by KRAMER



TEMPERATURE RECORD of a SELF-DEFROSTING LOCKER ROOM . .

With the THERMOBANK, a zero degree system is just as automatic as a 40° system—only more so.

NO BRINE SPRAY • NO WATER SPRAY
NO ELECTRIC HEATERS

THIS is an actual 24-hour temperature record of a Thermobank installation in a locker storage room of 500-locker capacity. During this 24-hour cycle, seven defrost operations took place. The equipment consists of two Thermobank evaporators, each connected to a separate compressor with a separate Thermobank. The compressors defrost independently of each other at staggered time settings, thus obtaining a minimum of temperature fluctuation in the locker room during defrost.

The installation was made by the Refrigeration Corporation of America, 241 W. 64th Street, New York, N. Y.

SEND FOR BULLETIN TV-345 RI

KRAMER TRENTON CO., *Trenton, New Jersey*

"DETROIT" VALVES

FOR BETTER PERFORMANCE

"Detroit" Expansion Valves and Detroit Solenoid Valves stand high in the favor of refrigeration men everywhere because they do the job better, and last longer. There is a "Detroit" Valve for every refrigeration need. Write for bulletin.

No. 897 Dura-fram Thermostatic Expansion Valve for commercial applications. Compact and easy to install.

No. 673 Thermostatic Expansion Valve. For many years the standard of the refrigeration industry.

No. 899 New Dura-fram Thermostatic Expansion Valves for commercial installations. Furnished with external equalizer and forged union connection.

No. 788 Dura-fram large capacity Thermostatic Expansion Valve, with No. 790 Distributor, showing the distributor tubes and equalizer connection.

No. 793 Differential Temperature Expansion Valve specially designed for temperatures below *minus* 30° F.

DRYING GAS CHARGED EXPANSION VALVES

No. 6 of a Series

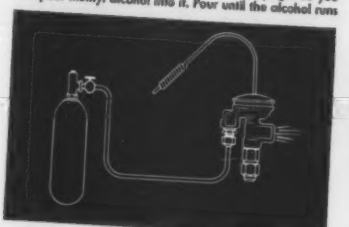
Moisture in a refrigeration system often accumulates in the expansion valves causing freeze ups which put the system out of operation.

After the system is thoroughly dried, it may be necessary or desirable to disconnect the expansion valve and dry it separately. Moisture may so permeate the valve as to make it impossible to dry it by ordinary means.

Detailed here are four effective methods of drying "Detroit" Gas Charged Expansion Valves No. 673 and 674; 893 and 894; 896 and 897; 899, 786, 787 and 788. Procedures for drying other type "Detroit" valves will be taken up in subsequent data sheets.

***Method No. 1*—Methyl Alcohol and Refrigerant**

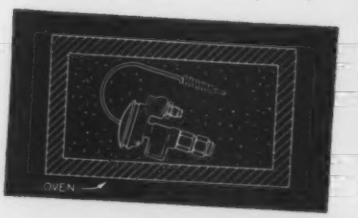
Hold the valve with the outlet connection upright so you can pour methyl alcohol into it. Pour until the alcohol runs



through the valve and out the inlet connection. Cap connections with fingertips and shake well. Then drain the methyl alcohol from the valve. Repeat this operation several times and finally connect the valve to a Freon or methyl chloride gas line. Use plenty of gas and blow the valve out thoroughly. This is a very convenient method, and one of the most effective.

***Method No. 2*—Atmospheric Oven (3 Hours)**

Use of this method demands an oven in which the temperature can be closely regulated. Any type oven will do, but temperature regulation is absolutely essential to avoid damaging the valve.

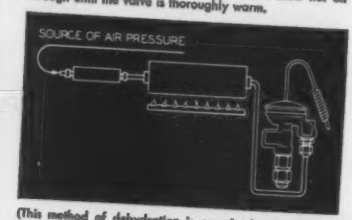


a. **"Detroit" Gas Charged Valves having maximum pressures of 20 psi or less can be dehydrated at 220°F.**

b. **"Detroit" Gas Charged Valves having maximum pressures greater than 20 psi can be dehydrated at 160°F. Bake for 3 hours, making sure temperature does not rise above indicated limit. Install or cap as soon as the valve can be handled to avoid entry of moisture from the air.**

***Method No. 3*—Heated Dry Air (30 Minutes)**

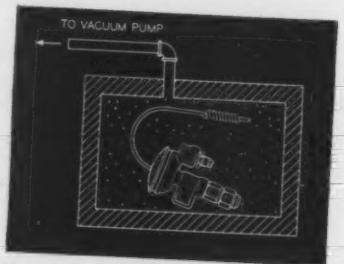
All "Detroit" Gas Charged Valves may be dehydrated by this method. Air temperature should be limited to 160°F maximum. Pressure on valve should not exceed 50 psi. Required is a source of air under pressure, a dehydrating cartridge, and a tank for heating the air. Blow hot air through until the valve is thoroughly warm.



(This method of dehydration is completely described in Sheet No. 4 of this series.)

***Method No. 4*—Heat and Vacuum Oven (3 Hours)**

Required is a temperature regulated oven, strong and tight enough to hold a vacuum of 26" to 27" mercury without collapsing or leaking air, and a good vacuum pump.



Place valve in oven, heat to 160°F maximum. Start the vacuum pump and hold under heat and vacuum for at least 3 hours.

Reprints of these articles, punched to fit your service book, available on request. Write for your copy.

DETROIT LUBRICATOR COMPANY Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

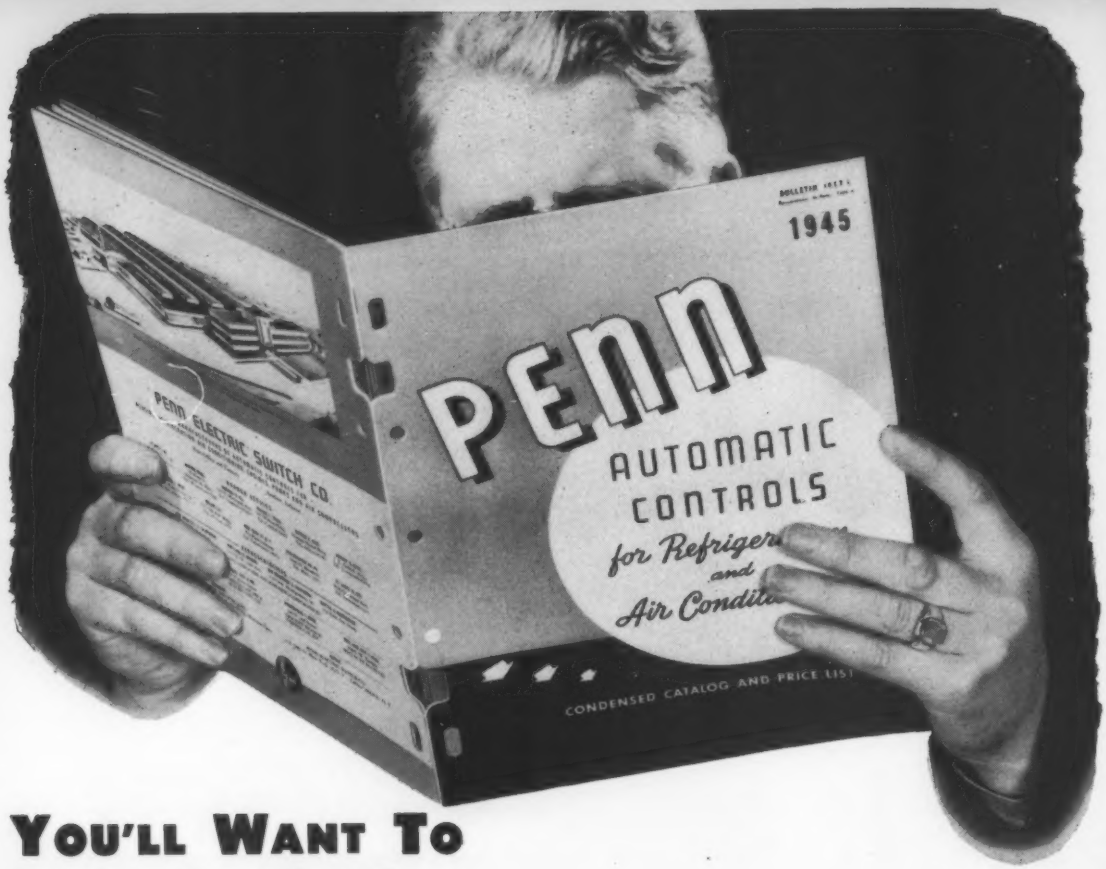
DETROIT LUBRICATOR COMPANY

General Offices: 5800 TRUMBULL AVENUE, DETROIT 8, MICHIGAN

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

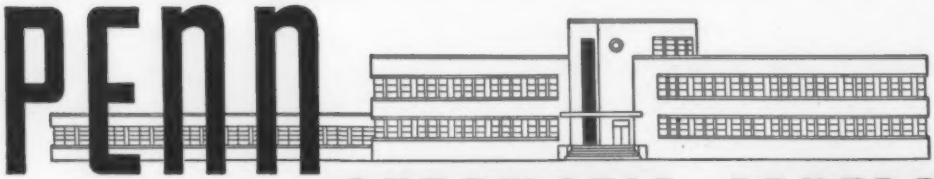
"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators



YOU'LL WANT TO READ IT, TOO!

It has all the facts on Penn Automatic Controls

● Here it is—PENN's new Condensed Catalog! It's packed with pertinent information about PENN Automatic Controls for Refrigeration and Air Conditioning. Complete with specifications, pictures and standard replacement parts, it gives you everything you want to know in a concise, easy-to-use manner. This 20-page book is conveniently indexed, too, so you can find the item in which you're interested at a moment's notice. If you haven't sent for your copy yet, a postcard request will bring one to you by return mail. Write *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 E. 40th Street, New York 16, U.S.A. In Canada: Powerlite Devices, Ltd., Toronto, Ontario.



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

BTU's

News • Laws • Trends

Refrigerator Controls Go. Effective Oct. 10, all controls on the purchase of mechanical refrigerators were lifted by WPB. So if you can get the units to sell, it's o.k. to sell them. Anyway, from the looks of things, it won't be long now.

WPB Out, CPA In. War Production Board ends its existence as a federal agency on Nov. 3, and a new agency, Civilian Production Administration, will succeed to the task of smoothing the transition of production from war to peace. J. A. Krug, WPB chief, is resigning as of Nov. 3 and the new agency will be headed by J. D. Small, who has been Mr. Krug's chief of staff.

The CPA will use its authorized powers "to expand the production of materials which are in short supply; limit the use of materials which are still scarce; restrict the accumulation of inventories so as to avoid speculation, hoarding and unbalanced distribution which would curtail total production; grant priority assistance to break bottlenecks which would impede the reconversion process; facilitate the fulfillment of relief and other essential export programs, and allocate scarce materials or facilities necessary for the production of low priced items essential to the continued success of the stabilization program."

Freezers by Maytag. The Maytag Co. has joined the long list of low-temperature cabinet producers. At a conference of branch managers and distributors, president Fred Maytag II revealed plans for marketing "an electric frozen food locker," along with lines of automatic washers, clothes drier, and gas ranges. The low temperature units are expected to be ready for the market by year's end.

Fire at Rotary Seal. Damage estimated at $100,000 resulted from a fire which swept the one and two story plant of Rotary Seal Co. No one was injured seriously, but it is expected to be several weeks before manufacturing operations can be resumed on a full scale. Charles Muller, vice president, reports that all efforts are being concentrated on getting back into production as soon as possible. The fire broke out in a room containing a supply of oil soaked metal shavings, and spread rapidly through the plant.

Peacetime Demand Notes. Alco Valve Co. anticipates demand for its products to continue at a pace that will permit it not only to retain all of its present 500 workers, but to add more. Capitalization of the company is being increased from $108,000 to $432,000 by transfer of funds from surplus to capital.

Frigidaire employment is expected to reach or exceed wartime peaks, officials report. Within three weeks of cancellation of war contracts, 90 per cent of the company's employes had been recalled for reconversion or peacetime production work.

At Westinghouse, officials report that peacetime business and employment in the first three postwar years will approximate 1941 levels. Production in that year topped $369 million and employment in all plants averaged 71,000, highest in the company's history up to that time. The company's appliance division will spend $12,300,000 to increase production by 50 per cent, and the air conditioning division recently acquired B. F. Sturtevant Co. expanding its facilities in that industry.

Locker Plant Prospects. Suppliers of equipment for the locker plant field, who met recently in Chicago, estimate that new plants will be installed at the rate of 2,500 a year. It was pointed out that, restrictions notwithstanding, some 1,200 plants were installed in the year just past.

Plants are becoming larger in terms of average number of lockers. A recent survey of 1,000 plants showed an average size of 409 lockers per plant, as compared to something over 300 in a previous study. Among likely new services of locker plants is addition of a "serviced" locker room, which is entered by plant employes only, for the convenience of persons who want only temporary storage facilities.

Production Figures. The commercial and industrial refrigeration industry's production for war requirements totaled approximately $180 million annually, according to a review of wartime accomplishments released recently by WPB. New facilities added by the industry to fill war and anticipated civilian needs amount to about $5,000,000, the report states.

Rema Fall Meeting Program. The program for Rema's fall meeting Nov. 7-9 at Hot Springs, Va. includes two general sessions in addition to product section conferences, the latter occupying the first full day of the meeting. Highlighting the opening general session will be a talk on "OPA—Its Price Regulations for Reconversion and Postwar," by Fred Schwarz, head of OPA's mechanical building equipment section. Theodore Sills will report on results of the Rema public relations program, F. K. Zimmerman on the credit program, and K. B. Thorndike on the All-Industry Show.

At the second general session, P. A. Karl (Brunner) will discuss possibilities and problems as related to export activities, Gene Robers (Weatherhead) will tell "How to Work Out a Postwar Advertising Program," W. H. Maxwell (Wolverine) will outline "Control and Operation of Field Sales Force," and F. F. Censky (Firestone) will be a featured speaker, his subject being "American Industry Looks Ahead."

Brunner Bookings. Shipments and billings by Brunner Mfg. Co. in August were largest in the company's history, president George L. Brunner has reported. Present

Continued on page 65

Mr. Robinson and Paul Jones look over the new ice-cream making unit in Indianapolis' Columbia Club.

From SOUP to

A view of the office of Refrigeration and Oil Burner Service Co.

YOU hear it said of plenty of commercial refrigeration contractors that they can handle a range of installations "from soup to nuts," but it's literally true in the case of Refrigeration & Oil Burner Service, Indianapolis firm headed by R. C. Robinson. This veteran dealership in the past several months has installed refrigeration in a wide variety of applications, from produce storage rooms to ice cream making equipment for one of the city's foremost clubs.

One of the jobs that called for special handling was in the Prime Restaurant, one of the city's leading kosher eating places. The restaurant is located in what was formerly a branch bank, and had a built-in vault, which had walls 18 inches thick. The old reach-in refrigerator owned by the firm had outlived its usefulness, and in planning a replacement the manager of the restaurant suggested to Mr. Robinson that perhaps some use could be made of the vault, which up to then had been so much "dead" space.

After looking the vault over, Mr. Robinson decided that something could be done about it. The walls of the chamber were water-proofed, after which it was relined with 4 inches of rock wool insulation. Refrigeration equipment consisting of a Bush wall-type coil and a ¾ H.P. Par condensing unit was installed, and the restaurant operator provided with a really "safe" storage space for foods. It is now used for fresh meats and poultry, and is carried at an average temperature of 35° F.

By thus making use of space that formerly had been idle, the restaurant owner was able to remove the old cooler, which was no longer usable, and to install dishwashing equipment in the spot it formerly had occupied in the kitchen.

Another modernization job was recently completed by the company in the Columbia Club. The club had an

Clubs or candy shops, restaurants or rooms for produce storage—they're all in the day's work to this alert refrigeration firm

•

NUTS . . .

This former vault in the Prime Restaurant provides a really "safe" meat storage cooler now.

ice cream hardening cabinet in use which had a capacity of only 30 gallons of mix, and which took two days to harden. The unit operated off of the central ammonia plant by a circulating brine system. In addition, the club used a 2½ gallon freezer unit, operated by a 1½ H.P. compressor, and used for the making of ice cream.

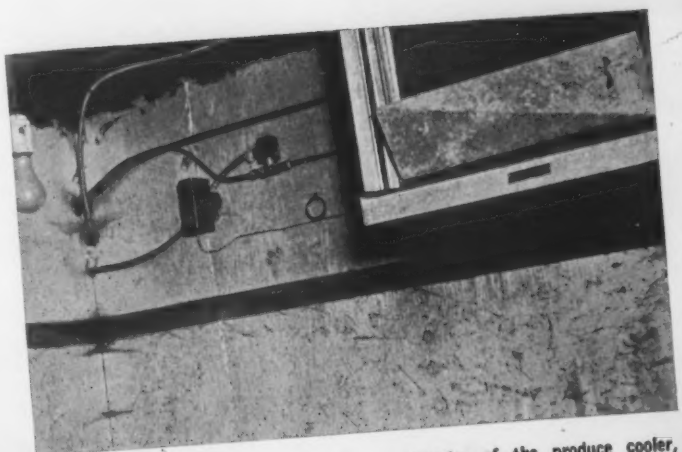
The hardening cabinet sprung a leak and couldn't be repaired, so after consultation with Mr. Robinson the club decided to modernize its ice cream making equipment. A reconditioned Bastian-Blessing unit, comprised of a 5-gallon freezer and a 60-gallon hardening cabinet, was installed as replacement for the former equipment. This equipment, hooked up to a 2 H.P. Par condensing unit equipped with an oil separator, more than doubled the former ice cream making capacity. With the more modern unit, the club could freeze five gallons of ice cream at a time, and harden it in 10 hours.

Space saving was another advantage gained by installing modern equipment. Located in the club's bakery, the new unit took much less area, a situation which went a long way toward easing what had been a pretty crowded condition. Management of the club, Mr. Robinson says, has expressed more than once its pleasure with the newer unit's performance.

In the Betsy Ross Candy Co., Refrigeration & Oil Burner Service has

Continued on page 43

A 1 H.P. Copeland condensing unit provides refrigeration for the Losche Co.'s produce cooler room.



Interior of the produce cooler, showing thermostat-valve hookup to assure dependable temperatures.

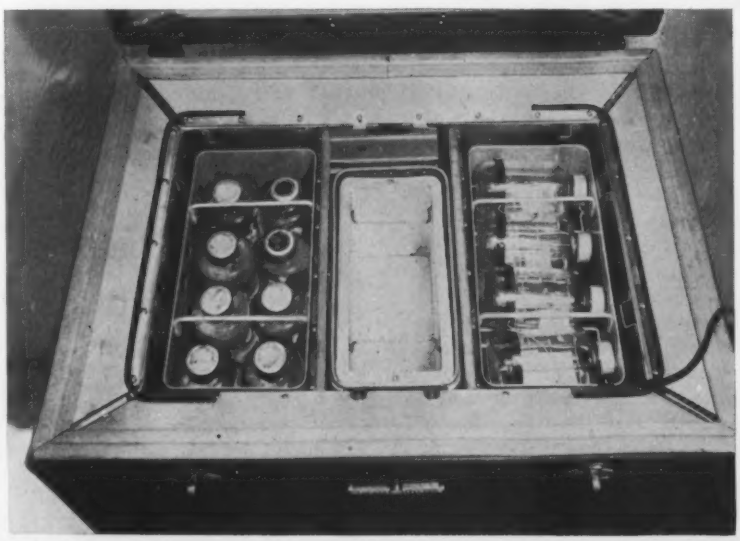
The Army made TWO MILLION CUSTOMERS

While the Army's maintaining its "best fed" reputation, it's making more and more GIs conscious of refrigeration's value in civilian applications

TODAY, just 325 miles from defeated Japan, Army cooks can reach into their refrigerators and delight GI appetites with beef that is the pride of Texas, apples ruddy with the blush of a Washington harvest, potatoes still stained with the rich black Iowa soil and hams still faintly pungent with the fragrance of a Virginia smoke house. It's the best-fed Army in the world, and refrigeration has helped to keep it that way.

Army planning coupled with the facilities made available by the production efforts of the refrigeration industry have won a resounding victory over tropical climates and food spoilage in transit.

Not only that—but the day-by-day contact with mechanical refrigeration equipment, and the knowledge that it was something that could be depended upon, come shell-fire or high water, for services ranging all the way from soft drinks to serums, has made millions of GIs more than ever conscious of the benefits that modern refrigeration can bring. When these men re-



Light-weight portable medical refrigerator developed for Medical Corps. Center section is for vaccine storage.

One of the Army's big 600 cu. ft. cold storage units shown here in field use.

Above: Cold storage and ice-making plant. This room is 14 x 30 x 14 feet high.

●

turn to civilian life, it's a better than even bet that they'll not forget refrigeration and that they'll be among the foremost of its boosters—whether the use be in home, farm, business or industry.

In effect, the army, through its use of mechanical refrigeration, has sharpened up a couple of million prospects for postwar commercial and domestic applications.

Army refrigeration units range in size from the 6-cubic-foot household models, used in hospital wards to store vaccines and life-saving biologicals, to the huge 14,000-cubic-foot refrigerated warehouses used in Army Quartermaster depots.

It might be 150° in the shade on a remote Pacific atoll, but GI Joe knows he can depend on a cool drink at his PX. And that beef on the menu tonight will be just as fresh and delicious as the day it started its refrigerated journey from the packing plant in Omaha, almost 8,000 miles away from the palm-thatched messhall.

The Army's chain of refrigeration starts at meat packing plants in the Untied States, where beef is boned and frozen in compact 50-pound packages. Beef—or any other food which must be refrigerated—is shipped from the originating plant to ports of embarkation in railway "reefers".

Carefully rechecked at dockside, it is refrozen if necessary. Here refrig-

Continued on page 45

●

Immediately below is a 150 cu. ft. walk-in unit, using ½-ton machine, electric motor driven. Below, left: Boxes of frozen meat stacked in one of the big cold storage rooms. This plant has six rooms. Below, right: Inside view of 25 cu. ft. unit, popular in combat zones. (Official U. S. Army Photos.)

This 29-foot semi-trailer unit hauls produce and frozen foods between several midwestern cities. Temperatures of 10°F. are kept for frozen foods.

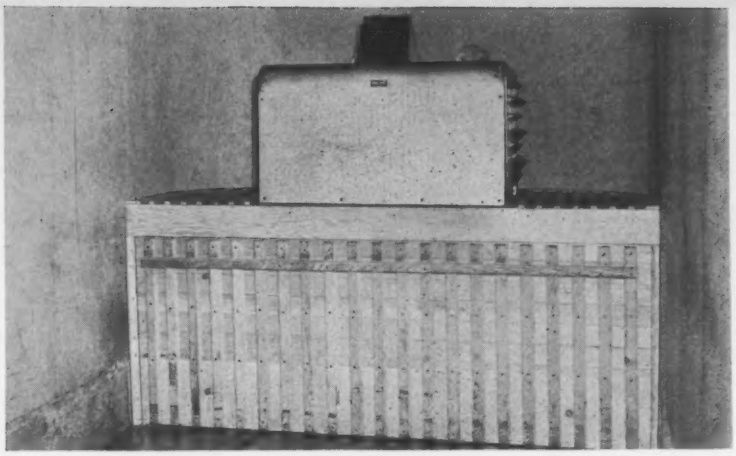
The driver pushes the starting button on the "heat-cool" switch of the Trail-Aire Conditioner unit. Note white valves for heating, red valves for cooling.

Mechanical cooling for trucks is fast replacing older and less desirable methods. Here is a great new field in the making—with a place for you in its growth and its future

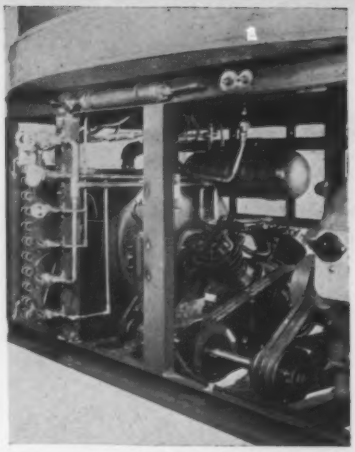
By Henry O. Kirkpatrick
Chief Engineer
Advance Manufacturing, Inc.

IN THIS post-war era, a vast new business is taking its place in the field of refrigeration. The nucleus of this potential business giant was planted and thriving on a small scale a few years before Pearl Harbor. The war accelerated its growth to a certain extent in that the needs of the armed forces for mobile equipment for cooling trucks, trailers and portable walk-in coolers spurred the research and development work in this field.

As a result of this continuing research and development, many new improvements and innovations have been made in mobile refrigeration equipment. The Trail-Aire Conditioner is a typical example of what this work has accomplished. This



Inside view of trailer, showing unit installed. The evaporator inlet is in foreground, outlet in the background.



Close-up of Trail-Aire unit, showing compressor, condenser, coil, dehydrator, valves, receiver tank and other parts.

YOUR *Highway* to New *Profits*

unit was recently placed on the market by Advance Manufacturing, Inc. for use in semi-trailers, and is marketed exclusively by the Fruehauf Trailer Co. The Trail-Aire Conditioner is a real air conditioner; it heats or cools as the need may be. Utilization of the reverse cycle principle makes possible this heating or cooling with the same unit.

During the past year, the writer has seen plenty of evidence that mechanical cooling for trucks is fast replacing the old and undesirable methods of using ice and salt mixtures and dry ice to protect perishables in transit. As reconversion gets under way and competition becomes a factor in the food business, this trend is bound to increase.

Still another factor that will help this branch of the refrigeration industry expand is the increased demand for frozen food transportation facilities. Until just recently, the use of dry ice was the accepted method of refrigerating frozen food shipments. This was not only expensive, as compared to mechanical

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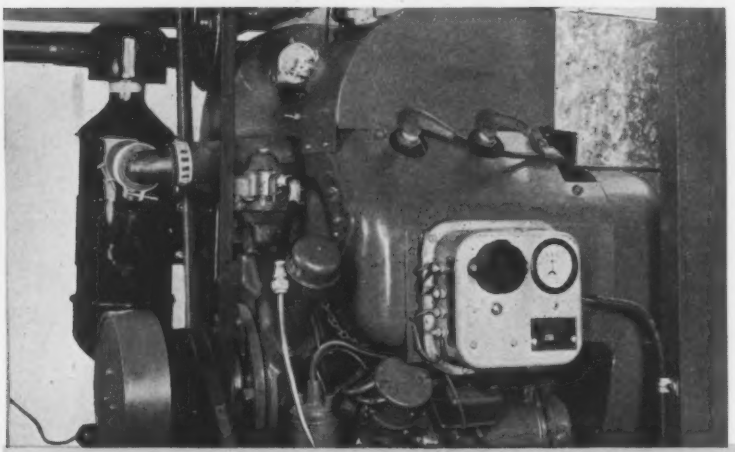

Engine unit, showing automatic control unit, generator and distributor, ignition coil. At top left is idler pulley on belt drive to evaporator blower.

Method of adjusting idler pulley on belt drive to evaporator blower.

Here is an easy way to a good understanding of the various ways used in figuring overhead

Is OVERHEAD Getting You Down?

By Fred Merish

REFRIGERATION men have often asked us if there is an easy way to an understanding of the various methods of overhead computation. Around this subject there is much fog, because unfortunately there are numerous ways of figuring it for costing purposes, and different men use different methods. This is confusing, particularly to one who is not familiar with figures, or who has more of a flair for mechanical work than for mathematics.

To get easy visualization of this subject, we present here simple figurative graphs, illustrating (1) the various methods of calculating overhead on estimates; (2) the reasons for variances between estimated overhead and actual overhead; (3) the pitfalls to watch out for when computing overhead on estimates; (4) the reason why estimated selling prices may vary period-to-period for the same operation, and (5) why one refrigeration man may get a different selling price than another, even though he uses the same percentages and has similar business costs.

Estimates sometimes differ widely among maintenance men with the same business set-ups, much to the perplexity of members of this craft. The following tables tell why.

Say prior-period figures show that overhead expense has a ratio of 80% to cost of materials. An estimate may be figured this way:

EXHIBIT A

Materials	$30
Labor	20
Prime cost	$50
Overhead expense (80% of materials cost)	24
Over-all cost	$74

This method would work out all right if every element that touches operation were fixed, but certain elements are neither fixed nor controllable. The calculation under Exhibit A applies whether materials, labor, or both (prime cost) are used as the basis of computation.

Suppose materials cost decreases to $20 during the period. Stick to this formula, and an estimate on the same job would give these figures:

EXHIBIT B

Materials	$20
Labor	20
Prime cost	$40
Overhead expense (80% of materials cost)	16
Over-all cost	$56

You cut overhead 33 1/3% because materials dropped 33 1/3%—but overhead does not decrease with the cost of materials. If overhead is

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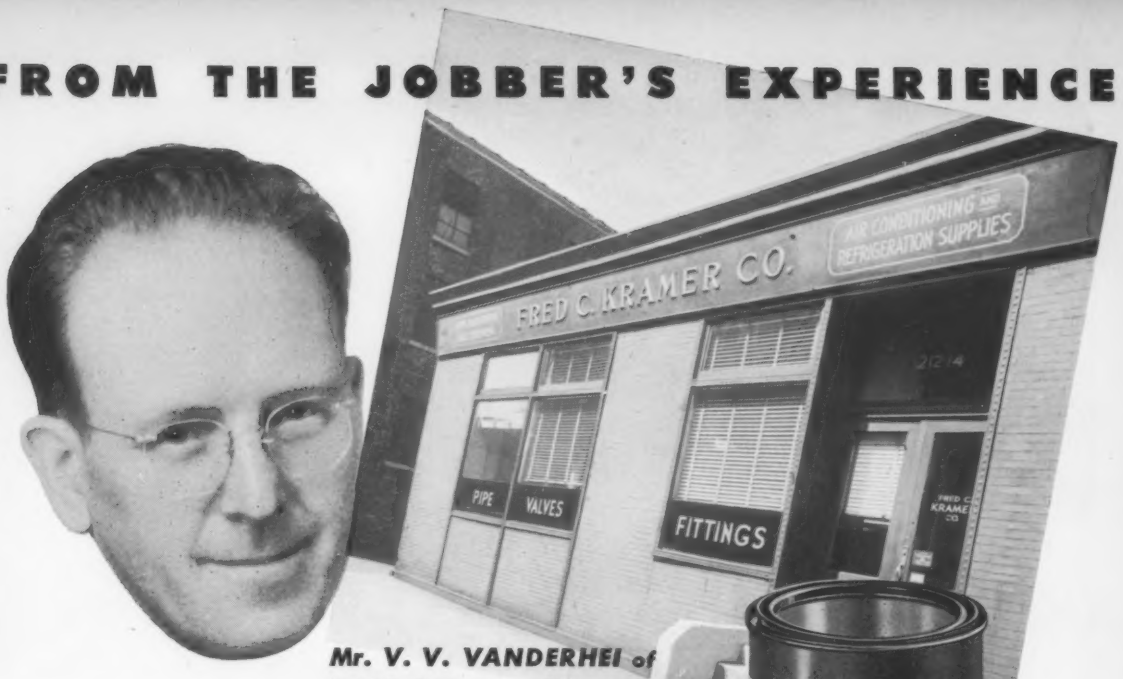
FROM THE JOBBER'S EXPERIENCE



Mr. V. V. VANDERHEI of
Fred C. Kramer Co., Chicago, says—

"SELLING DAVISON'S SILICA GEL GIVES ME A FEELING OF SECURITY"

"In these days, the refrigeration industry is too vital to the national welfare to take chances with drying agents. Our customers rely on Davison's Silica Gel because they know it goes the whole way on any job. No matter how difficult a job may be, the many 'action-plus-freedom' advantages of Davison's Silica Gel give both our customers and us a feeling of security that is hard to define."

GIVES YOU—1. Maximum capacity for moisture prevents freeze-ups . . . is not affected by oil; **2.** Instant action; **3.** Removal of Acids, Corrosive compounds and other impurities; **4.** Freedom from Channelling of Refrigerant; **5.** Safety — will not attack metals or alloys.

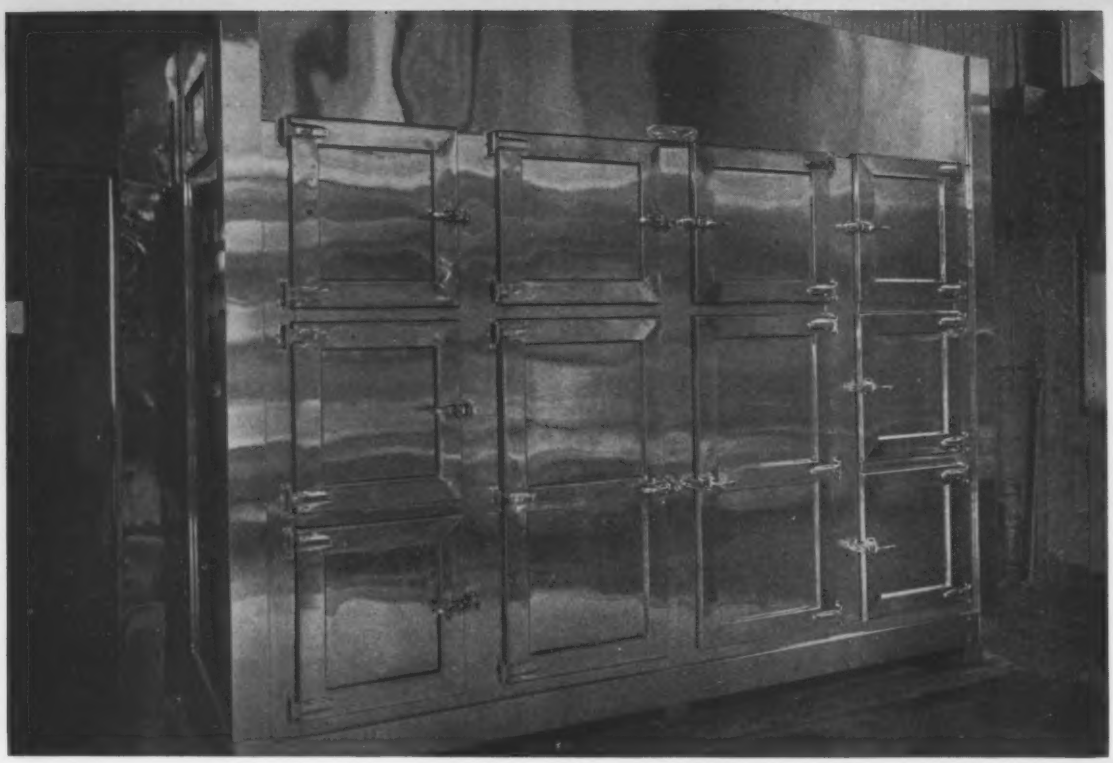
CURTIS BAY WORKS

THE DAVISON CHEMICAL CORPORATION

Progress through Chemistry

BALTIMORE-3, MD.

Canadian exclusive sales agents for DAVISON'S SILICA GEL: CANADIAN INDUSTRIES LIMITED, General Chemicals Division



ABC Refrigeration, Inc., built this all stainless steel job for a restaurant, and designed it to special size and capacity.

REFRIGERATION

By L. H. Houck

SERVICE in the refrigeration industry commonly refers to the repairing and restoration of outside equipment. Its importance cannot be minimized.

But there is another service in use in the industry, which under proper guidance and cultivation will lead a small business into big business. It will change small volume in sales, mechanical service, parts or units, into a large volume. In reality, the growth and prosperity of any size commercial refrigeration operation is wrapped up in this one feature.

John Ackermann, owner of Ackermann ABC Refrigeration, Inc., New Orleans, La., has been rendering this type of service for years—profitable and interesting years. This service is a combination engineering, advice and sales service to the customer.

All commercial refrigeration customers know something about refrigeration. Not all of them have the equipment they need, not all of them have the kind of equipment they want, and some of them wish to high heaven somebody would make something that would fit their business.

The engineering service needed by some commercial customers is a matter of room and location. They want a refrigeration unit to fit a certain

John Ackerman, owner of Ackerman ABC Refrigeration, Inc.

space to handle a predetermined product, and they can't tear the building down to make it fit a standard size.

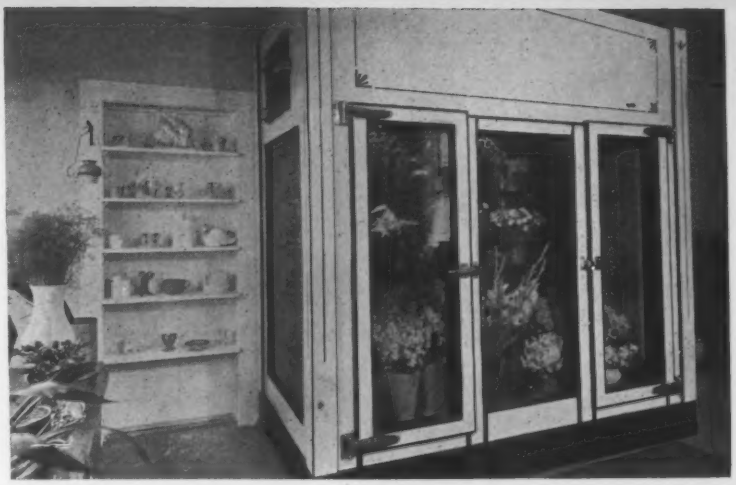
On a question like this Mr. Ackermann surveys, measures, and engineers. The windup will be that he will build a unit the proper *high* by the proper *wide* with perhaps just exactly the offset corner, equipped with standard refrigerating machinery, also selected for the purpose involved.

In the final analysis, he has tailored the job to suit the customer's needs. The customer is happy. He tells his friends. He pays his bill. The next time he wants a piece of refrigeration merchandise, if it is no more than a water cooler, he calls Ackermann.

Another type of customer comes in. His equipment is just about worn out. It was factory built. It rusted out in a certain corner, and the belt came off the compressor at exactly 11 o'clock every Sunday morning.

He is tired of all that. He wants a job especially engineered and especially built.

Mr. Ackermann gets out his instruments again, charts a course across the man's place of business, and comes up with an entirely different answer.



A special-purpose florists' job, porcelain inside and out, with glass doors. This is another job made to order for the particular customer's requirements.

He finds that the customer had the wrong type of equipment in the first place, but has worn it out in use and it needs replacing. This customer is a merchant and what he needs is a new style meat case. He needs a place to display pre-cut meats and a place where he can put out porkchops row on row. Mr. Ackermann shows him how he can save labor by precutting meats—that meats precut under production conditions with saws and automatic machinery can be stored and displayed and that one butcher can wait on twenty times more customers than by cutting and selling from the piece on the block. Volume for the merchant goes up; overhead goes down. Mr. Ackermann has scored again by selling factory-built equipment. He was able to sell it because he knew his product and the merchandising quirks of the man's business.

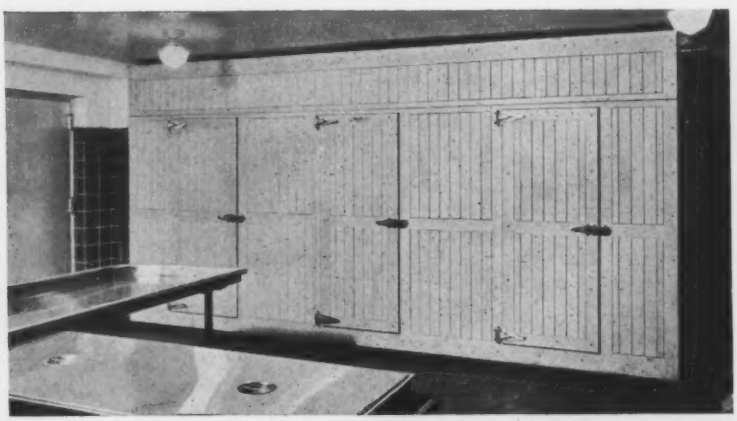
These are facts taken from actual case histories and selling feats that can be duplicated by any dealer who takes the trouble to study his product in relation to the ultimate consumer.

Mr. Ackermann had an amusing "kickback" on the sale of the meat display case. The man bought nearly

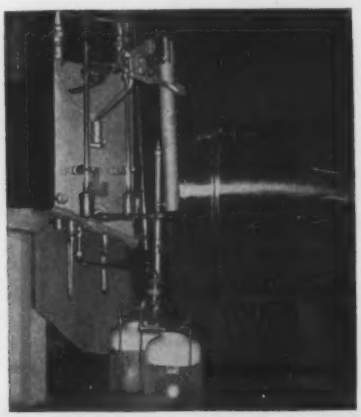
Continued on page 44

Made to Measure

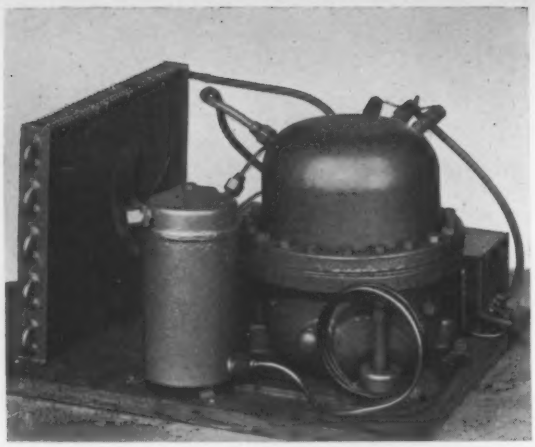
Here's the story of a contractor who makes a business—and a mighty successful one—of catering to hard-to-fit installations

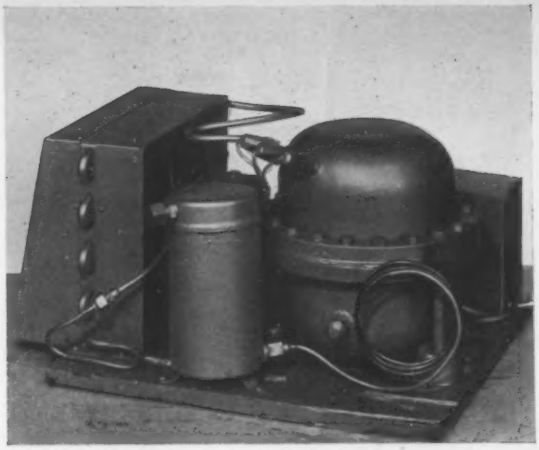


This refrigerated salad box holds 2000 portions of salad, and is used by a New Orleans hotel. Building and storing salads in advance for banquets speeds service and eases 'rush' demand.



The company specializes in dairy jobs. Here's one of them.





Pictured above are two 1935 Grunow Condensing Units. At left, Model "H"; at right, Model "K".

Profits in GRUNOW Service

By Elmer H. Wiedwald

Part Three of a series outlining common servicing problems and how to solve them

IN OUR consideration of some of the common servicing complaints on Grunow "C" series units last month, we discussed causes and remedies of such problems as an inefficient pump, moisture in the system, and improper air circulation. To continue, here are some additional possible trouble sources:

K. Restricted Carrene Meter or Float. All "C" models were equipped with high side floats. However, many have been replaced in the field with meters or corrected floats. Some defective driers will allow the drying agent to get over in the float and plug the outlet, or the float will fail, due to mechanical trouble. In any event, the Carrene charge will collect in the high side; the evaporator will have little or no frost, and when the purge screw is opened, liquid Carrene usually will come out.

Check with the customer to make sure your trouble is not due to moisture. If in doubt, heat up the base of the float or the meter, or let the box stand for a half hour or so to allow the ice to melt.

Another check is to disconnect the liquid line at the rear of the cabinet. Allow the machine to run for about 5 seconds and build up a high side pressure. If the liquid still does not come out the outlet of the float or meter, it will have to be replaced. Be sure there is enough Carrene in the system to lift the float before doing so.

Assemble the replacement meter so that the purge screw is accessible. Screw meter securely to the board. Drain Carrene, if any is left in the evaporator, and recharge with the correct amount, allowing 2 ounces for purging.

L. Restricted Liquid Lines. In rare cases, the liquid line going up the rear of the cabinet will plug up. The symptom will be the same as moisture, or a defective meter, or float. It can be easily checked by disconnecting the liquid line and starting the machine to determine if a vacuum is produced at that point. If the line is restricted, disconnect at the evaporator and blow out with methyl chloride in the reverse of the direction in which the Carrene flows. When disconnecting any of these lines, be sure to have your measuring cup handy to catch the Carrene. When the restriction is cleared, connect lines and purge.

M. Faulty Control Bulb Clamp. The clamp holding the model "C" control bulb becomes brittle after a period of years and falls apart, allowing the bulb to dangle out in the open. The bracket can be repaired by removing the evaporator and silver soldering any broken parts, or a new bracket installed.

The evaporator is held on to the inner liner by three bolts. Drain the Carrene charge and remove the porcelain baffles and control. Suction and liquid line flare nuts can then be disconnected.

All succeeding models used a spring clip arrangement which gave very little trouble.

Shorted Lead Wires

Shorted lead wires at the control, or in the relay box, will not allow the box to shut off. A rare complaint is to find the control contact leads burnt together.

One difficulty that was encountered was that the splice made in the rear of the cabinet between the liner and outer shell would come apart. This can be remedied in one of two ways. Disconnect the suction and liquid lines and drain Carrene charge from evaporator. Now comes the long and tedious process. Remove the evapo-

Continued on page 48

Editor's Note: All photos used in this series are from Grunow Authorized Service, Inc.

KEROTEST

TURN TO YOUR JOBBER *first and always*

KEROTEST
VALVES • FITTINGS
AND ACCESSORIES FOR THE
AIR CONDITIONING and
REFRIGERATION INDUSTRY

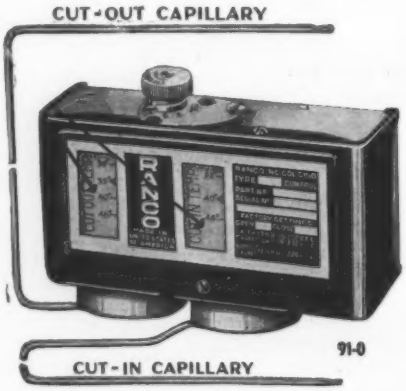
"Kerotest is one of just fifteen manufacturers to receive the Fifth Star and final award for their Maritime Flag."

FOR THESE
Very Good Reasons

- **TRAINED SALESMEN**
  You'll find no *ribbon clerks* at your Kerotest jobbers—every man is a hard-working, hard-hitting salesman, completely schooled in technical "know-how" and product knowledge. He's a very helpful fellow—ready to aid you on any problem.
- **NEW PRODUCT INFORMATION**
  Your Kerotest jobber is well informed, in advance, on new developments, new products and new ways to use time-proven items. The frequent contacts between jobber and buyer promote more up-to-the minute knowledge and early use of these new ideas.
- **TECHNICAL KNOWLEDGE**
  Your Kerotest jobber's technical knowledge is the result of many years experience—it is not confined to a single line or product but to the broad needs and requirements of his customers.
- **LARGE INVENTORY STOCKS**
  Your Kerotest jobber has a strong purchasing power—and in these abnormal times is able to procure the "almost" impossible items you need so badly. Under normal merchandising conditions his stocks are large and ample.
- **EFFICIENT PERSONNEL**
  Your Kerotest jobber's staff is trained to recognize every opportunity in which they can provide SERVICE—more efficiently and promptly—to give intelligent information, quickly and courteously.
- **FAST DELIVERY**
  In these difficult days, your Kerotest jobber provides a quick and systematic delivery service—so that little time is lost, and for postwar his service will be *even faster*.
- **HELPFUL AID**
  Turn to your Kerotest jobber *first and always* for the most accurate and up-to-the minute product information, for help on your toughest problems.

KEROTEST MANUFACTURING CO.
PITTSBURGH, PENNA.
Branch Offices:
NEW YORK • CHICAGO • HOUSTON • LOS ANGELES

A MAN IS KNOWN BY THE COMPANY HE KEEPS . . .



Type 91-0 Exclusive Interlocking Two-Temperature Control, for use on single or multipul unit systems. For natural or forced connection units. High relative humidity. Automatic defrosting of coil regardless of weather or load conditions or cold location of compressor.

Ranco Controls, used for replacements, have kept many refrigerators running during the past four years. The work of service men in the industry can never be properly evaluated and compensated. But this work will pay dividends in the years ahead, because more and more individuals have learned about Ranco Controls at first hand, and they know their accuracy and dependability.

What is good in times of stress is equally good in times of peace. Your Ranco Jobber will soon be able to serve you more completely than ever before. Meanwhile, we ask your cooperation while stocks are building. Let us go along together to build a more secure Tomorrow.

Ranco Inc.

COLUMBUS 1 OHIO

"Let's share our knowledge—exchange our experience"

Here's how

Edited by
Warren W. Farr

Locating Cooler Drains

In built-up cork coolers, locate all drain lines below the level of the concrete floor for accessibility. If lines are located above this point it is necessary to tunnel them through the insulation, causing unnecessary puncturing and loss of efficiency.

I HAVE always had considerable trouble cleaning air-cooled condensers, as one only gets the dirt off the surface with a brush. Necessity being the mother of invention, I finally took an old vacuum cleaner and discarded everything but the motor and motor housing, to which I attached a funnel which I made to fit the cleaner where the bag is attached. This funnel is about a foot long, gradually tapered with a ½" iron pipe thread x ⅜" SAE flare half union welded in the end.

The air coming from this funnel is concentrated enough to remove any dirt or dust in an air-cooled condenser.

I find this to be one of the handiest tools in my service truck—that's why I do it this way.

Robert J. Whiteside, Waterbury, Conn.

Mechanics' Mirrors

Most mechanics use some mirror in their work. Usually the mirror is a salvage job from some woman's discarded pocketbook. Frequently it is adapted from some other field of endeavor; the dentist's mirror is in wide usage.

The Ullman Products Co. Brooklyn, N. Y., is making a complete line of mirrors which are *mirror tools* and can be applied to most requirements in the industrial field.

These mirrors are used primarily as an "extra eye" to give vision in the blind spots with which every mechanic must contend. Three models are featured:

Model A-2: Round mirror, ⅞" diameter, all-angle swivel joint, knurled handle; Model B-2: Oval mirror, 1" x 2", all-angle swivel joint, knurled handle; Model K-2: Rectangular mirror, 2⅛" x 3½", telescoping handle, 15⅝" overall length open, 6⅝" overall length folded.

Things Have Changed

Nobody would seriously deny that the old-time and apprenticeship methods of learning trades were all right in their day, but times have changed. We live in a faster day. Things happen in days and hours that used to take months and weeks.

Not so many years ago, railroads advertised "72 hours to the coast". Today air lines advertise "60 hours to any place in the world". Manufacturing methods have changed, too.

One of the reasons that so much can be accomplished in so little time today is that men no longer have to spend so much of their time learning how to do their jobs. Except in a few instances, apprenticeship has given way to organized and directed training.

The old-time method of taking several years to train a man to become an expert in refrigeration won't work in the busy postwar period. He'll have to be taught quickly, and well. Naturally, you won't get an "expert" out of a three-months' training routine, but if the students have the proper mechanical aptitude, they'll enough know-how to handle a great variety of work in both shop and field, with proper supervision.

War-time "speeded-up" classes in refrigeration, under sponsorship of various local Refrigeration Councils, proved that if you start with good-grade men, you can make them creditable refrigeration mechanics in a relatively short time. Maybe they can't tackle the toughest jobs right

Continued on page 42

I USE an ordinary self-starting electric clock to check the running time of a refrigerator when no time recorder is available. Remove the plug from the clock and connect the leads direct to the motor leads. The clock will then run only when the motor runs. Set the clock to the correct time and start the refrigerator. Check the amount of time the clock has lost over any given period of time—this will be the amount of time the appliance has shut off.

This same hook-up can be used to check any automatic appliance where the clock leads can be wired beyond the thermostat to the leads going direct to the appliance. Naturally this hook-up should be used only on 110 V A.C. appliances.

A. J. Partee, Burlington, Wis.

FIVE DOLLARS REWARD

WILL BE paid by THE REFRIGERATION INDUSTRY for any information on installation or servicing procedures and shortcuts accepted for publication in HERE'S HOW, The Service Man's Department.

Send your suggestions on shop equipment and methods, tools, or other ideas to HERE'S HOW EDITOR, c/o THE REFRIGERATION INDUSTRY, 812 Huron Rd., Cleveland 15, Ohio.

Help Yourself to Big

Self-service meat cases are proving profit-builders in stores large and small.

The trend toward self-service in the retail food field opens an expanding market for refrigerated display and storage units. Here are sales facts

A NEW and growing trend in the retail food merchandising field—the trend toward self-service operation and the pre-packaging of both meats and produce items for more attractive display and greater saleability—is opening an important, expanded market for refrigerated display and storage equipment.

This applies both to super-markets operated by the large retail grocery chains and to individual stores, or small groups of stores, operated by independent food merchants. The lead in this new trend, naturally enough, is being taken by the larger food store operators, but alert independents will quickly follow the larger stores' lead. They can be expected to do this for at least two important reasons:

1. A desire to keep pace with the field, in point of modern equipment and merchandising methods.

2. Economic pressure exerted by competitive merchants who have swung over to self-service and pre-packaging of meats and produce.

In the viewpoint of many persons in the retail food business, the day is not far off when virtually all foods of any perishable nature will be pre-packaged and sold in refrigerated display cases and stands—and through merchandising set-ups of the self-serve type. Until recently, frozen foods have been the foremost class of food products to be sold in this manner. The new thinking, however, would extend this trend to non-frozen products—meats, fruit and vegetable items, delicatessen items, and dairy products.

Advanced thinking in the retail food field envisions the day, not too far off, when we will find meats pre-cut and packaged by the packer, natural cheese pre-cut and packaged to consumer-size quantities, and fruits and vegetables reaching the retail store packaged, with all necessary trimming taken care of before-hand. Done in quantity, this operation can be set up and managed as scientifically as a manufacturing operation.

What this trend will mean in extending the use of refrigeration equipment in thousands of America's food markets does not require much imagination. Where today the average retail food store uses refrigerated meat cases, reach-in equipment for dairy products, and perhaps a frozen

foods case for low-temperature products, the food merchants who swing over to this new method of merchandising—and there will be a decided swing, for the reasons mentioned previously—will use (in most cases) separate units for roasts, steaks, chops and other meats of that type, a separate case for luncheon meats, another unit for delicatessen items, separate cases for fresh vegetables and fresh fruits, and other individual cases for bottled beverages (milk, soft drinks, beer), cheeses, poultry, and fish.

If—and this is not unlikely—the self-service, pre-packaged trend gains

r Profits . . .

any appreciable foothold in the produce distribution set-up, the larger operators, chains or independents, probably will set up a separate packaging department. Additional refrigeration, this time for storage rather than display, will be required in this operation. And as the packaging moves back along the line, toward the grower and repacker levels, use of extensive refrigeration facilities becomes more than ever a "must." In the first of a series of articles on "What's Ahead in Pre-Packaged Produce," the magazine *Super Market Merchandising* says:

"Clearly, refrigeration must be carried on in conjunction with prepackaging if this new endeavor is to prove successful at all. In any further discussion of the subject of pre-packaging, consequently, it should be borne in mind that *refrigerated* prepackaging is implied."

A member of the research department of du Pont's Cellophane Division, who has experimented with prepackaging for more than a decade, declares pre-packaging can be done only in conjunction with refrigeration, since the primary function of pre-packaging is to prolong the "shelf-life" of the produce to give it a longer saleable time in the market.

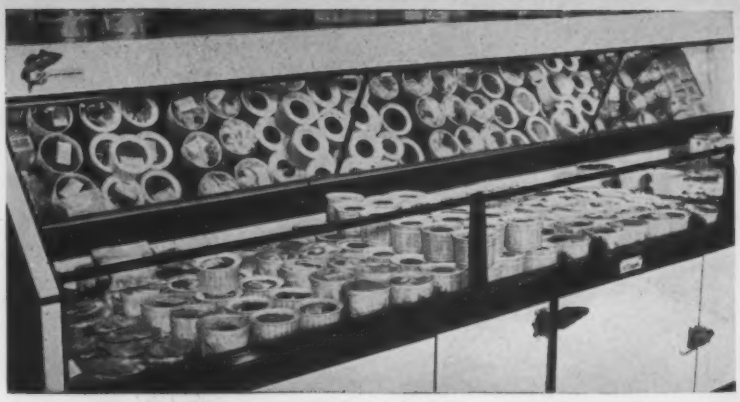
A & P Tea Co., which is pioneering pre-packaging in several test units in the Columbus (Ohio) area, has compiled an accurate record of the length of saleability of pre-packaged produce as compared to non-refrigerated, unpackaged produce. Tomatoes, for example, were 100% saleable at the end

Photos of Self-Service Cases from Hassmann Refrigeration, Inc's. "Self-Service" Handbook.

Above, self-service as applied to fresh produce display. Users find it steps up sales and cuts down spoilage losses. Below: impulse items sell better from open display cases.

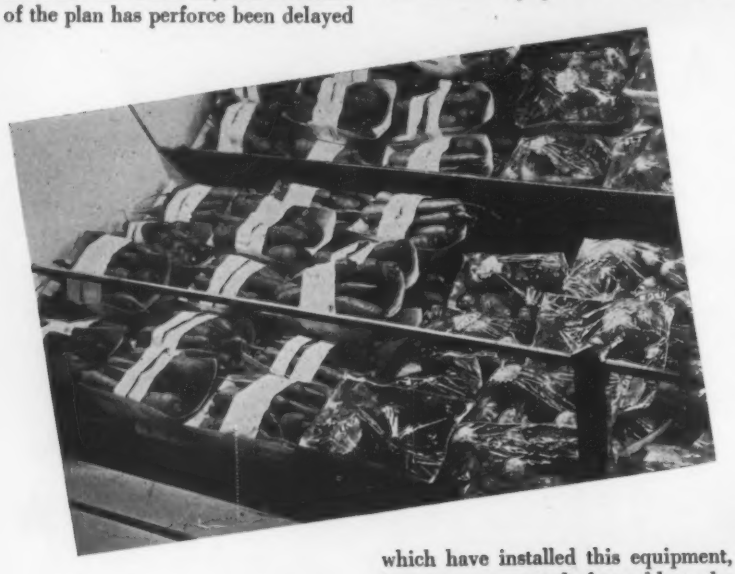
Frozen foods are an ideal self-service sales builder.

of five days when pre-packaged and displayed under refrigeration; unrefrigerated tomatoes were only 50% saleable at the end of the same period. Spinach, refrigerated, was 90% saleable after five days; the non-refrigerated product was a total loss. Fresh peas, refrigerated, were 100% in good condition; without refrigeration only 25% of them were fit for sale after five days. Head lettuce, green beans, cauliflower, and carrots—all were 100% saleable after five days' refrigerated display; without refrigeration, only 50% of the lettuce, none of the beans, 50% of the cauliflower and 25% of the carrots could be offered for sale.



Delicatessen products sales have increased by 75 per cent in some stores through open display, when customers can see the variety and quality.

Percentage-wise, there are only a handful of stores selling packaged meats and vegetables at present. The idea was just starting to take hold when the war came on, and extension of the plan has perforce been delayed by both the shortage of packaging and wrapping materials and of refrigerated store equipment. Food stores which have installed this equipment, however, are strongly favorable to the plan, as a saver of both time and money and in terms of doing a greater volume of business with increased customer satisfaction.



One west coast store that went 100% self-service with packaged perishables more than doubled its sales, and cut costs of labor by 5%. This operator said he wouldn't think of going back to his former method of doing business, and listed some of the advantages of self-service operation as follows:

Self-service moves more merchandise per customer.

Because it makes shopping so much more convenient, it builds 100% accounts for the store.

It eliminates the necessity of finding and planning on peak crews for peak business hours.

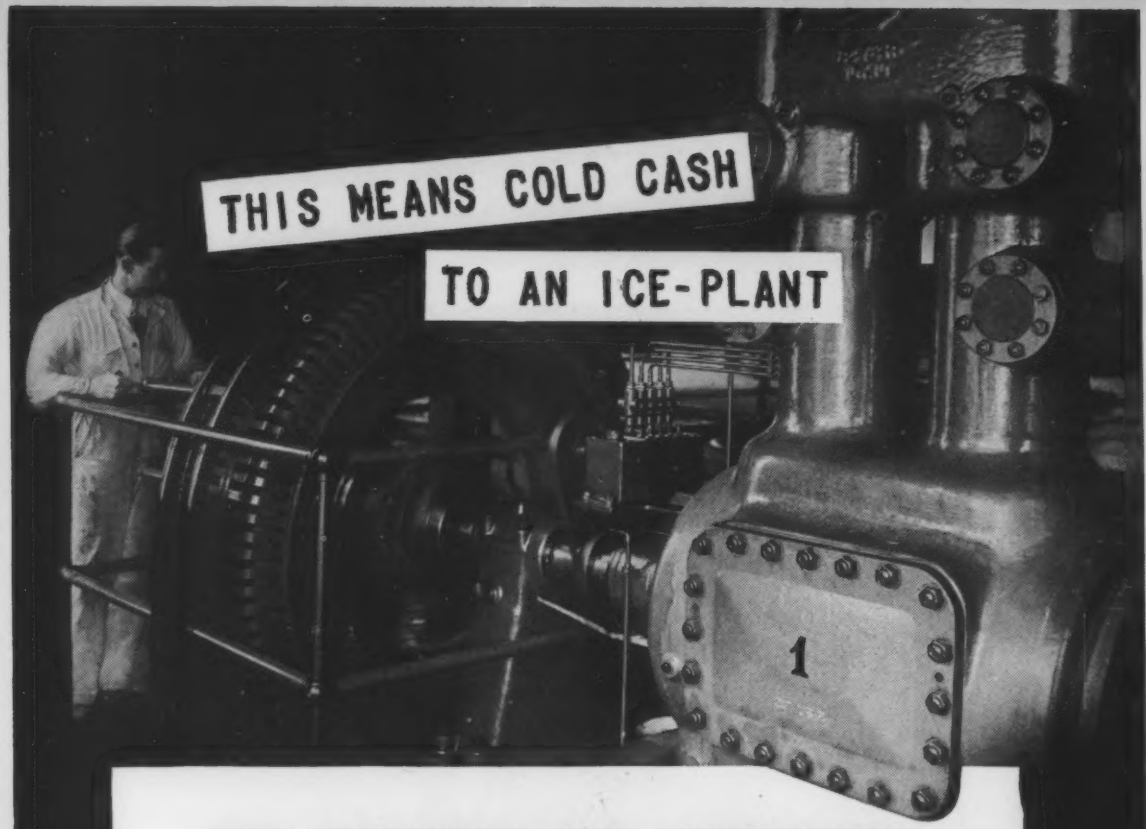
In one of its biggest savings, self-service eliminates unnecessary conversation with the customer. Employees are always in productive work—cutting, packaging or re-stocking the self-service cases. For ex-

Continued on page 55

(Above), Pre-packaging produce items increases sales by making merchandise more attractive. Studies by one food chain are reported in this article.

●

(At right), Open display cases combine effectively with regular service cases, as shown here. Packers are pre-packaging many items for self-service now.



SUN REFRIGERATION LUBRICANTS...

Put An End to Mid-Summer Shutdowns, Stop Carbon and Sludge in Ice Plant Compressors

An ice company operated four compressors, but every Summer, when they were busiest, had to shut them down to remove carbon from the valves.

To solve the problem, they called in a Sun Engineer, who recommended a Sun Refrigeration Lubricant which does not form hard carbon, and which forms comparatively little carbon-residue.

Since the switch, the plant has had no carbon or sludge in compressors. For four years, they have eliminated the mid-Summer shutdowns, now produce at top capacity right through the season.

These benefits, which mean cold cash to the management, are typical of the results hundreds of compressor-operators are getting with Sun oils. In big chemical plants, in small domestic refrigerators, in all types and sizes of air-conditioning and refrigerating-systems, Sun lubricants mean continuous operation, long machine-life, absence of carbon or sludge. Send for your free copy of Sun's 48-page, illustrated book on the lubrication of refrigerating and air-conditioning equipment. Or for complete information and help, call the Sun man near you.

SUN OIL COMPANY • *Phila. 3, Pa.*

Sponsors of the Sunoco News-Voice of the Air—Lowell Thomas

SUNOCO

SUN INDUSTRIAL PRODUCTS

OILS FOR AMERICAN INDUSTRY

Gerald W. (Jerry) Weston has been appointed managing-director of the Southern California Radio and Electric Appliance Association with headquarters in Los Angeles.

For the past two years, Mr. Weston was with the War Production Board in Washington, D. C. in charge of the section handling the electrical appliance, radio, and mechanical repair shops of the country. Prior to this, he spent a year with the National Electrical Contractors Association in Washington as assistant to the general manager; and 19 years as manager of the Electric Association of Kansas City, Mo.

●

Harold D. Conklin has been appointed manager of the appliances division of Admiral Corp., Chicago. Mr. Conklin joined Admiral in November, 1944, as manager of the electric range division.

●

Harley W. Whitmore has recently been appointed chief engineer of the Deepfreeze Division of Motor Products Corp., North Chicago, Ill. He will be given complete responsibility for the continual development of Deepfreeze home freezing units and industrial sub-zero chilling machines.

Prior to his joining the Deepfreeze staff he was employed for years in a similar capacity. He has been instrumental in the development of locker plant evaporators, freezer rooms, altitude chambers, industrial and domestic sub-zero chilling units and other types of refrigeration equipment.

●

Paul H. Puffer has resigned as vice president of Norge Division, Borg-Warner Corp., to become president of the Creo-Dipt Co., Inc., manufacturer of stained shingles. Since last January Mr. Puffer has served as a Norge vice president developing an employee and public relations program.

●

A number of personnel changes in the Henry Valve Co. organization have been announced by Guy J. Henry, president.

Charles V. Gary, recently returned after three years service in the Naval Reserve, becomes executive vice president and general manager.

Mr. Dawson Mr. Gary

Richard S. Dawson has been named vice president in charge of sales. He was formerly sales manager of Alco Valve Co. Mr. Dawson will be assisted by **George W. Wilson,** who has been active as manager of jobber sales.

Douglas K. McIlvaine will be works manager, including administration of the engineering department. He has most recently been engaged in engineering and manufacturing in the electronics and control field. **Evan Jones** will be electrical engineer.

●

In four new appointments of key personnel at Alco Valve Co., **John E. Dube** becomes vice president and general manager, **Charles B. Lockwood,** assistant general manager, **Roger P. Kipp,** sales manager, and **Franklin M. MacDougall,** chief engineer.

Mr. Dube

Mr. Lockwood

Mr. Kipp

Mr. MacDougall

Mr. Dube has been in the Alco organization since 1938, and a vice president since 1942. Mr. Lockwood, secretary-treasurer of the company since 1942, was recently elected vice president, and now adds the duties of assistant general manager.

Mr. Kipp has been in the Alco sales department since 1937, with the exception of the war years, in which he was procurement director. He has been a divisional sales manager since early this year. Mr. MacDougall joined Alco in 1936, and has been assistant director of engineering. He succeeds Mr. Dube as chief engineer.

●

Leonard C. Doolittle has been appointed industrial hose sales engineer of The Weatherhead Co., of Cleveland. Maj. Doolittle has just returned from three years of service in the U. S. Air Corps, spending the last two years overseas as senior flying control officer of the 8th Air Force. Before entering the service he was division sales manager of the Gates Rubber Co., Denver.

●

W. S. O'Connor has been promoted to national field sales manager of United States Gauge Co. to assist L. L. Corcoran, sales manager. **H. M. Bear** will succeed Mr. O'Connor as district manager of sales territory covered by the New York office. Experimental, metallurgical and research

facilities are being expanded and moved to new air conditioned quarters under the direction of A. E. LeVan, head of research and development.

●

Vernon E. (Sam) Vining, nationally-known retail merchandise selling authority, has been appointed appliance merchandise consultant for the Westinghouse electric appliance division. Widely known in the electric appliance field as a consultant, author and speaker, Mr. Vining during the war worked as a consultant to the U. S. Treasury in the sale of war bonds.

During his assignment with the Treasury he continued his work with private industries as well as his work as a speaker and writer. He was with Westinghouse from 1933 to 1940 in various appliance sales posts, resigning in 1940 to become a consultant on appliance merchandising.

●

Walter B. Moses, Jr. has been named regional representative of Marlo Coil Co., St. Louis, in Louisiana, Mississippi, Alabama and Northwestern Florida. Mr. Moses, a graduate engineer, is resuming his commercial and engineering activities after wartime service as assistant naval architect of Pendleton Shipyards Co., Inc., New Orleans.

His headquarters will be at 7836 St. Charles St., New Orleans.

●

Robert A. Graves has been appointed manager of dealer sales for the New York Appliance Distributing Branch of General Electric Co. Mr. Graves has represented General Electric appliance divisions in the New York area since early in the '30's. In his new position he will be responsible for all G-E appliance sales to authorized dealers in metropolitan New York.

●

Bela Deutch, who has been associated for the past 19 years with Alco Valve Co., recently resigned his position of vice president in charge of production and factory management to become the head of Standard Machine & Mfg. Co.

Located at 8213 Gravois Ave., St. Louis, Standard has been producing a number of articles during the war, and will manufacture various refrigeration accessories in the postwar era.

●

Howard L. Clary has been named sales promotion manager of the Norge Division of Borg-Warner Corp., and **John P. Morgan** has been named southwest central regional sales manager. Both men are returning to Norge after three years with War Production Board.

Mr. Clary, before joining WPB, was with the Ludwig Hommel Co., Pittsburgh, Norge's oldest distributor. Mr. Morgan had been in the Norge organization as a regional sales representative from 1930 until he joined WPB in 1942.

●

D. J. Sweeney has been named engineer in charge of mechanical development of the research and advance development department of the engineering division of Crosley Corp. For the past 10 years, Mr. Sweeney was associated with General Electric Co., of Bridgeport, Conn.

●

E. D. Wacker has been appointed general manager of the C. J. Tagliabue division of the Portable Products Corp. Mr. Wacker, who has been associated with this division for 22 years, was general sales manager for the last eight years.

●

William C. Van Cleaf has been appointed director of industrial relations for Allis-Chalmers Mfg. Co.

"FLUXINE" FLUXES

are the result of fifty years of scientific research into the metal-joining field. There are 89 FLUXINE Fluxes . . . one for every welding, silver soldering, brazing, and soft soldering operation . . . each with its own properties, designed for a particular metal-joining operation. All have been perfected not only for highest efficiency, speed, and long life, but for economy and safety as well. FLUXINE Fluxes cause no injurious fumes to irritate eyes or nose of the operator.

So confident are we that wherever a metal-joining operation is required FLUXINE Fluxes will do it better, faster, and more economically than any competitive fluxes, that we will be glad to have you try it at our expense.

Write today for a generous sample and directions for using FLUXINE Fluxes on 57 different metals.

Ask your jobber . . . he knows the FLUXINE line produces the best results with the greatest economy.

KREMBS & COMPANY

Established 1875

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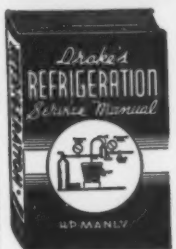
CHICAGO 10, ILL.

FLUXINE

NEW '45 EDITION



REFRIGERATION SERVICE MANUAL

"This book really helps you earn more"

Tops for . . .
- Service Men
- Maintenance Men
- Dealers
- Engineers

Only **$2.00** Written by H. P. Manly, refrigeration authority, this NEW book covers refrigeration problems in conversational language so that its 300 pages and 138 diagrams and illustrations can't miss being a real HELP TO YOU. Covers practically every operation in field service and shop operations which may be required. Includes domestic types of refrigeration, and fully and completely explains the commercial types in small and medium sizes, such as used in markets, milk depots, soda fountains, flower shops, etc., as well as in many air conditioning systems.

INCLUDES GAS REFRIGERATION

The new '45 Refrigeration Service Manual covers repairs and maintenance of gas refrigerators and systems . . . leaves nothing to doubt . . . explained clearly and concisely. Only **$2.00**

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City ..... Zone ..... State .....
.... Money enclosed .... Send C.O.D.

HERE'S HOW . . .

Continued from page 35

away, but there are plenty of jobs they can do.

The quality of your own supervision and your fieldtraining of new men will be especially valuable postwar. The armed services will discharge, before long, thousands of men who are partially trained in one element of the mechanical arts or another. These men can be valuable additions to your postwar staff, if their "growth" in the industry is directed wisely. This is the time—right now—to re-check your shop and field training program.

Speedy Defrosting

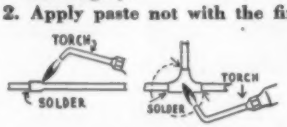
This is an old one, but it is worth repeating. To speed up defrosting on a household refrigerator, set the control at the highest temperature position. Empty the ice trays and fill them with hot water before putting them back in the evaporator. This will save you several minutes on the job.

GOOD SOLDER JOINTS

I HAVE noted that there are many who know, but yet try to rush the heating of solder joints, resulting in leaks. I have seen buddies of mine in our shop overseas throw the flame directly upon the joint and fill the joint with carbon and dirt from the torch.

Here are a few little steps to be followed:

1. **Be sure to clean the joint thoroughly.**
2. **Apply paste not with the finger, but with an old tooth brush or swab. (Your fingers may be greasy, adding dirt to the joint.)**



3. **Heat the tubing above the joint about an inch or two in the direction the solder is to flow, in the case of swedge joints; the center, in the case of unions and tees.**
4. **Apply the solder as soon as the joint is hot enough so that the solder will flow, being careful not to add too much solder, which leaves a solder drop on the joint. If careful, there is no need to wipe the joint, saving solder.**

T/Sgt. Ralph P. Babock, c/o P.M., New York

Some Selling Points

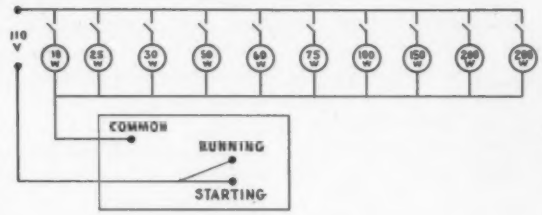
It has been so long since we have had much merchandise to sell that a great many of us may have forgotten some of the sales points we used to use in convincing prospects of the value of making refrigeration equipment an integral part of their business operation.

Just as a "refresher," it might be well to review some of the selling points which have been found most effective with various types of equipment. The particular points which follow have to do with commercial refrigeration; in later paragraphs we'll review the selling points for air conditioning equipment, home and farm freezers and household refrigerators.

From a *profit* standpoint, commercial refrigeration equipment provides accurate temperature and humidity control; it assures fresh, clean, wholesome food and drinks; and helps to maintain uniform appearance and taste; it permits keeping a wider variety of foods; it allows a saving of valuable food trimmings which can later be used profitably; it preserves the saleability of candy, pastry, cut flowers, vaccines, certain drugs and chemicals; it adds to the attractiveness of the establishment; it denotes a modern well operated business; it pleases present customers and attracts new ones.

From a standpoint of *convenience and dependability*, in addition to automatic operation, refrigeration provides temperature and humidity conditions to suit a wide variety of foods and products; it permits stocking perishables and delicacies with high mark-up and profit; it has marked advertising value and sales value as a medium for displaying merchandise; it improves employee working conditions; it reduces accident hazards; it contributes to the cleanliness of the premises.

From the standpoint of *economy*, refrigeration equipment reduces work, saves money by reducing waste and permitting food to be bought in larger quantities, saves time in preparing meals, allows food to be prepared early in anticipation of rush-hour business, is adaptable to a wide variety of uses and can be operated at low cost.



HERE is a relay tester I have found of great use in my refrigeration work. It has a range of .10 amp. to 9.0 amp.

Approximate amperage values are listed below. While these may be about 10% in excess of true amperage, they are sufficiently accurate for all practical purposes.

25W	.25A
30W	.3 A
50W	.5 A
60W	.6 A
75W	.75A
100W	1.0 A
150W	1.5 A
200W	2.0 A

Note: **Some relays (G-E, for example) are designed to operate in various positions, as indicated in most cases by marking on the case.**

TO OPERATE: Plug in enough lamps to give approximate running current, then increase enough to cause starting contact to operate. If equipped with overload trip, this can be tested by cutting in both circuits. It should *not* trip on running winding alone.

Joe Gerson, Jackson, Tenn.

Looking for Trouble: No. 3—High Wattage

If your readings show that the refrigerating unit is taking high wattage, here are some things to check:

1. High head pressure.
2. Compressor short of oil.
3. Faulty motor windings.
4. Faulty transformer.
5. Faulty capacitor.
6. Faulty wiring.

SOUP TO NUTS . . . .

Continued from page 23

recently installed in the chocolate processing room a 3 H.P. Par condensing unit, to replace a 5 H.P. ammonia compressor which had gone out of service. The old unit was connected to two blower coils in the processing room, using steel tubing and thermostatically controlled, and a coil in the front office which was used to air condition the sales rooms.

The replacement unit, which used methyl chloride as refrigerant, is doing a more efficient job with 3 H.P. than the 5 H.P. unit formerly had done, Mr. Robinson says. In making the change-over, it was necessary to wash out the cooling coils. This was done without removing the coils from their mountings, through use of a small pump. The installation since it was changed over, has performed satisfactorily, with little service expense, Mr. Robinson reports.

Produce Storage Job

One of the most interesting installations on the Robinson roster is that made recently for Theo. Losche Produce Co. The firm had an old unit in a walk-in cooler for the holding of tomatoes, celery, and other produce items. The unit broke down and could not be repaired, so the task was to replace it, bringing controls, etc. up to date. A 1 H.P. Copeland unit was used in modernizing the system; the water-cooled unit was used in conjunction with a ⅜ inch Alco magnetic valve, and was controlled by a Ranco thermostat in the cooler area.

Cooler is maintained at 40° F. with 5° differential, in this way: when the temperature of the cooler comes to the desired point, the thermostat breaks the circuit, closing the magnetic valve. The compressor then pumps down the coil, which allows a low suction pressure to be maintained on coil and compressor body, lowering the possibility of a seal leak during "off" periods of operation.

Because of an occasional shortage of produce, the cooler may not be in use for periods of several days. A manually-operated snap switch has been installed to break the circuit to the magnetic valve, so that the suction pressure on the equipment never exceeds 10 to 25 lbs. Resulting dependable temperatures in the cooler enabled the produce company to eliminate much of its spoilage losses.

Mr. Robinson has been in refrigeration as an independent operator since 1931; in the refrigeration business since 1926. Three installation and service men are in the company's employ, plus an ex-service man trainee, two truck drivers, and a secretary-stenographer. Extensive remodeling operations are now in process in anticipation of sales activities.

As merchandise becomes easier, Mr. Robinson plans to separate sales and maintenance activities, handling the former himself and turning the latter over to his present shop foreman. Many of his postwar lines are all set, others are uncertain, but Mr. Robinson is sure of one big thing—his organization will be active in all phases of commercial refrigeration . . . both sales and service.

CANADIAN DISTRIBUTOR

J. H. Ashdown Hardware Co., Ltd., Winnipeg, has been named distributor of Crosley refrigerators in the province of Alberta.

ANSUL ST IN REFRIGERANTS

Ansul was first in America to produce Sulfur Dioxide for refrigeration (1915).

At the demand of the growing fractional-tonnage household refrigeration industry, Ansul began production of Methyl Chloride.

LIQUID Sulfur Dioxide BY ANSUL*

LIQUID Methyl Chloride BY ANSUL*

Ansul still analyzes *individually* every cylinder before it is shipped because—

The purity, dryness, and safety of handling of Ansul refrigerants are still top standards of a high-specification industry which Ansul is proud to have pioneered.

*REG. U. S. PAT. OFF.

ANSUL CHEMICAL COMPANY

"NOW IN OUR 30TH YEAR"

MARINETTE, WISCONSIN

AGENTS FOR KINETIC'S "FREON-11," "FREON-12" AND "FREON-22"

JARROW PRODUCTS
420 N. LA SALLE ST., CHICAGO 10, ILLINOIS

TOPS! for LOW TEMPERATURE

DOLE
Vacuum
COLD PLATES
Maximum Refrigeration Efficiency
for all
REFRIGERATION
PURPOSES

Investigate . . . . then you will specify . . . . DOLE Vacuum Cold Plate Evaporators for maximum refrigeration efficiency.

See your Refrigeration Dealer

Dole Refrigerating Company
5910 N. Pulaski Rd., CHICAGO 30, ILL.
New York Branch:
103 Park Avenue, New York 17, N. Y.

Continued from page 31

60 feet of case and went into precut meat business right.

Several months later he came in, all smiles. He wanted Mr. Ackermann to build him a new walk-in refrigerator, and added that profits from the display installation would go a long way toward paying for it.

Another customer was under-powered. He killed his own meat and the hot carcasses almost ran his little compressor to death. His complaint was, however, that it didn't shut off—not that he was overloading it with hot meat from which the blood temperature could not be lowered by hanging out all night. In the south the beef has to go into the refrigerator at once. Mr. Ackermann made a new sale, and a new booster.

They're All "Specials"

Special jobs are never alike. Ackermann's ABC has put in more than 75% of the dairy refrigeration equipment around New Orleans.

Much of this is because Mr. Ackermann has realized that much of the dairy refrigeration equipment must be "hand-tailored." He doesn't try to standardize a job to make it like another; the ball that he keeps his eye on is the need of the customer, the work to be done, and then how it can be accomplished.

Milk is cooled down as soon as pasteurized with a brine which circulates through coils inside the pasteurizer. It is cooled down to 34° F. and is immediately bottled and stored in a cooler.

No two jobs are alike, Mr. Ackermann said, because capacities are different and locations are different and interiors are different. An efficient job must be engineered to the existing equipment. Attention to these details rather than trying to promote the sale of inadequate equipment has resulted in his large volume in this field. Dairy owners know that Mr. Ackermann will have a sympathetic ear for their needs and their troubles.

Mr. Ackermann is continually studying new uses for refrigeration. His reputation for personal service to users of refrigeration has brought in many unusual jobs.

He received the job of engineering and designing refrigeration equipment for mobile blood banks—trucks which are used by the Charity Hospital in New Orleans to collect blood. Louisiana state ambulances are so equipped. This truck can collect from a blood donor anywhere in the state.

This refrigeration unit has its own Diesel-electric plant which keeps the refrigeration unit in operation while the ambulance is moving. It is equipped so that it may be operated from a light socket when it is stationary.

The Banquet Problem

Every hotel has the problem of preparing large supplies of food for banquets. This food must be prepared in advance and stored.

Ackermann ABC engineered coolers for a large New Orleans hotel in which they could store 2000 portions of salad and another which would hold 2000 portions of ice cream in dishes and on waiters' trays.

Not all hotels by any means have this kind of equipment, and nearly every hotel that caters to large banquets is a prospect for the progressive dealer.

Here are a couple of ABC men at work on one of the company's "tailor-made" installations.

Another special application is a box for the preservation of flowers. This allows the florist to get his blooms cut and his sprays built during union hours. Supplies are pre-cut and refrigerated. These are common in the South and in use all over the country but many florists have their own ideas and need to have the help of a competent refrigerator man to help them work it out.

The ones Mr. Ackermann has been

making operate at about 45° F. under humid conditions. He uses porcelain inside and out and equips them with glass doors so the florist can get the advantage of a display effect.

This service that builds business is refrigerating know-how. It is the heart-blood in an interlocking structure that promotes increases in mechanical service, the sale of parts, the sale of new manufactured units, and sale of shop-built and specially-designed refrigerating equipment.

Industries that are venturing into new uses for refrigeration, and thousands of new uses are on their way, are going to come for help to merchandising- and service-minded refrigeration dealers.

TWO MILLION CUSTOMERS . . .

Continued from page 25

erated cargo vessels, take over and the frozen foodstuffs are moved to ports of call stretching from Honolulu to the very doorstep of Japan.

The Army was prepared to handle refrigerated cargo even while its men were fighting bitterly for Pacific beachheads. Frequently, storage space was not available on shore, but reefer barges kept the pulse of Army refrigerated supply throbbing. The barges were loaded at sea—far out of range of Jap coastal guns. Towed closer to shore, the reefer barges acted as floating iceboxes until a dockside plant, reefer trailer or prefabricated portable warehouse was available on shore.

Mobile Field Units

Highly mobile field refrigerators, standard gear for Army assault troops, are doing yeoman service in Army installations in the Middle Pacific. The simplest model in use is an insulated chest with room for 400 pounds of frozen packaged boneless beef. Capable of performance as a shipping container, point-of-consumption refrigerator and a field ice box, the chest maintains foodstuffs in a safely frozen state for a week—even at the high temperatures prevalent in tropical areas of the Middle Pacific.

Popular with Army combat units and still used widely in the Middle Pacific is the 25-cubic-foot container. Reminiscent of the farm freezers used in the United States, the plant is powered by a one-cylinder, hand-started gasoline motor. The unit features an automatic temperature control that cuts off the power plant at any desired preset refrigeration level. There is room for two of these models on the 2½-ton trucks customarily used by Army kitchens.

Whenever the tactical situation permitted the use of standard Army messhalls, the 50-cubic-foot reach-in refrigerator saw heavy service. Weighing only 850 pounds, one of these can be knocked down into four easily-transportable packages in 20 minutes. Most models of this unit are equipped with two-cylinder gasoline engines, although electric motors are used in some cases.

Largest of the field-type refrigerators is the 150-cubic-foot walk-in model. Designed for rugged outdoor use, it saw frequent combat operation. In transit it is carried on 2½-ton Army trucks. Its aluminum frame construction, on improved models designed in 1945, makes it a lightweight for its size—2,000 pounds—as compared with the 3,900-pound earlier model.

Fitted for use with electricity, the unit is cooled by a blower system powered by a four-cylinder gasoline engine. Fully automatic, it has a refrigeration range of from 10° to 40°. Most Army units favor a normal storage temperature of 35° to prevent the freezing of fresh foods.

A Postwar Prospect

A development that holds a certain degree of postwar promise resulted from the necessity for furnishing shore-based refrigeration units to island-hopping Army invasion forces. Semi-fixed prefabricated refrigerated warehouses provided an answer that proved highly satisfactory under combat conditions. Army Engineers can assemble these plants quickly for use wherever large groups of men have to be fed for a considerable time.

Prefabricated units range in size from 600-cubic-foot models, which are sometimes used as kitchen walk-in refrigerators, to 14,000-cubic-foot models, favored in Quartermaster railheads and depot installations.

Most popular for overseas use is the 1840-cubic-foot reefer. Like other prefabricated units, a freon-type warehouse, it relies on 15-horsepower gasoline engines for its production of 12,000 B.T.U.'s per hour.

In many of the Army installations

● **Yes, it's mighty profitable to service those electric refrigerator motor-starting capacitors *the Aerovox way*. Just use the Aerovox listings to pick the correct replacement for the given motor. Get that replacement at your local Aerovox jobber. Install it. Presto! A satisfied customer and a nice profit.**

The Aerovox postwar line includes exact-duplicate capacitors as well as the universal types. Use the type that suits your purpose best. You don't have to improvise when you use Aerovox capacitors.

● **Ask Your Jobber . . .**

Ask him about Aerovox motor-starting capacitors. Ask to see the listings. He can give you a copy of our latest catalog—or write us direct.

AEROVOX Capacitors
INDIVIDUALLY TESTED
AEROVOX CORP., NEW BEDFORD, MASS., U. S. A.
In Canada: AEROVOX CANADA LTD., HAMILTON, ONT.
Export: 13 E. 40 St., New York 16, N. Y. Cable: 'ARLAB

where "prefabs" are in use, the average mean temperatures hover around 80° F.

In addition to their use for food storage, Army Signal Corpsmen find "prefabs" valuable for storage of film sensitized paper and dry cell batteries. In early phases of the war the Army learned that heat hastened chemical action on these items and, in some cases, caused a 25 per cent reduction in their useful lives.

In rear areas of the Middle Pacific, the Army relies on the large, commercial-type refrigerated warehouses, familiar throughout the United States. Cold rooms in these units call for heavy compressor units using ammonia.

The "Prefabs" Were Tops

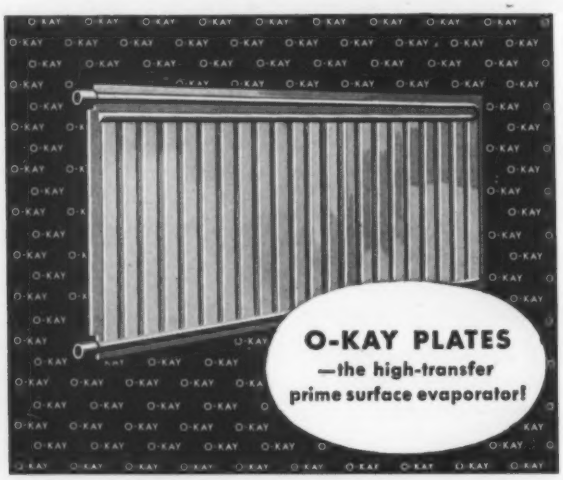
But it is the "prefabs" that have handled the millions of tons of frozen and "chill space" cargo shipped to Army forces on Pacific battle fronts. A classic example of the gigantic refrigeration installations built by Army Engineers, where only coconut groves existed before, is the more than 270,000-cubic-foot refrigeration area still active on Saipan. In this area the 14,000-cubic-foot models are used throughout.

Army hospitals receive top priority on refrigeration equipment. Each 1000-bed hospital is equipped with four 8-cubic-foot refrigerators, specially adapted for the storage of whole blood. Penicillin, yellow fever and smallpox vaccines and plasma are other vital items requiring refrigeration.

A recent discovery revealed that both plasma and penicillin do not require refrigeration during air shipments. Both may be exposed to tropical heat for as long as a week without loss of effectiveness. Yellow fever and smallpox vaccines, highly sensitive to heat spoilage, are packed in dry ice for overseas shipment and kept at temperatures below 35° F. until used.

The refrigeration industry served the cause of American victory. And GI Joe, back home and raiding the family refrigerator, can recall with a grin,

"I couldn't take the refrigerator with me, so they up and sent it after me!"



Investigate O-Kay plates — the finest cooling devices available to the refrigerator industry. Ideal for freezer cabinets, storage rooms, salad pans, milk coolers — all low temperature applications. Write Kay, today!

O-KAY COILS

KAY PRODUCTS COMPANY, Division of Tyler Fixture Corp. NILES, MICH.

KAY PRODUCTS COMPANY, Dept. RI-11, Niles, Michigan.
Rush information on O-Kay [ ] Plate Coils [ ] Forced Convection Unit Coolers [ ] Panel Coolers.
Name
Address

In this scene from Frigidaire's recent "Reconversion-to-Sales" conference at Dayton recently are (left to right) E. R. Godfrey, Frigidaire general manager; C. F. Kettering, GM vice president in charge of research; M. M. Roberts, works manager, and P. M. Bratten, general sales manager. Behind them is a display of the new BI-17 electric ranges.

UNIVERSAL COOLER MERGER IS APPROVED

The merger of Universal Cooler Corp. and Utah Radio Products Co. into International Detrola Corp. was approved by more than the required two-thirds vote of each stock in shareholders' meetings conducted by all three companies. The merger, expected to be effective Oct. 31, provides for exchange of one Utah share for six-tenths of a share of Detrola, one share of Universal Cooler Class A no-par stock for one of Detrola, and one share of Universal Cooler Class B for one-fourth of a share of Detrola. It unites companies with a total of nine manufacturing plants in this country and two in Canada.

POSTWAR BOOKINGS TRIPLED AT UNITED

R. S. Wieding, president and general sales manager of United Refrigerator Mfg. Co. sales division, reports that in the three weeks after the VJ-day his firm had booked orders from franchised distributors totaling over three times the volume of its best prewar year. One outlet, Morton Show Case Co. of Dayton, Ohio, placed an order for 1571 units totaling $565,750.

The company has tripled the capacity of its main plant at Hudson, Wis., and has added plants at Connellsville, Pa., Minneapolis and St. Paul. Another plant is planned for the west coast. United took over the reach-in business of Midwest Mfg. Co. last year.

GETTING YOU DOWN?

Continued from page 28

correct on Exhibit A, it should remain unchanged on Exhibit B, inasmuch as the two estimates were made in the same period and based on the same experience figures, taken from the last profit-and-loss statement prepared.

EXHIBIT C

Materials	$20
Labor	20
Prime cost	$40
Overhead expense (Exhibit A)	24
Over-all cost	$64
Over-all cost (Exhibit B)	56
Estimate short-costed	$ 8

Overhead on jobs may be computed by the labor-hour method. For example, note the following:

EXHIBIT H

Materials	$30.00
Labor—(15 hrs. @ $1.50 hr.)	22.50
Prime cost	$52.50
Overhead expense (15 labor hrs. @ $2.50 hr.)	37.50
Over-all cost	$90.00

The overhead per labor-hour is computed by dividing the overhead expense for a prior period by the esitmated labor-hours for a current period, or the actual labor-hours recorded for the prior period. For example, if the overhead expense is $600 for a prior period and the labor-hours spent on jobs during that period totaled 200, the overhead expense per labor-hour is $3. If a current estimate is figured at 12 labor-hours, the overhead expense is 12 times $3, or $36.

This method is used frequently and successfully in factories and by service men in all fields on estimated jobs, whether the work is done cost-plus or on a flat price. However, it should be checked against the ratio of overhead to selling price if the ratio of labor to materials on an estimate does not check with experience figures. Suppose your experience figures show:

EXHIBIT J

Sales	$1,000	100%
Cost of labor. $150 (1)		
Cost of materials .. 450 (3)		
Total cost of sales	600	60
Margin on sales	$ 400	40
Overhead expense (150 labor hrs. @ $2 hr.)	300	30
Net profit	$ 100	10%

Note that this shows a ratio of materials to labor of 3 to 1. If, during the next period of 150 hours, you reduce the materials-to-labor ratio to 2 to 1, this will be the result:

EXHIBIT K

Sales	$750	100%
Cost of labor .. $150 (1)		
Cost of materials 300 (2)		
Total cost of sales	450	60
Margin on sales	$300	40%
Overhead expense (Same as on Exhibit J)	300	40
Net profit	none	

"COOLER" COOLER

A home freezer and cold storage unit has been ordered for the Wyoming state penitentiary at Rawlins, it was announced by Malcolm LeSeur, secretary of the State Board of Charities and Reform. The board intends to install a large unit at the prison farm at Riverton, when they become available; and place smaller ones in other state institutions.

SO LITTLE DOES SO MUCH!

THIS MUCH THAWZONE (BY WEIGHT)

1 to 150 (in hermetic units 1 to 300)

FOR THIS MUCH REFRIGERANT (BY WEIGHT)

AND COSTS SO LITTLE!

The ⅛ of an ounce of Thawzone needed per pound of refrigerant costs only 10c if bought in the 4-ounce size, less in the pint size. The cost of any job is computed by figuring 10c for each pound of refrigerant in the system. ⅛ ounce = 1 teaspoonful.

THAWZONE PATENTED The PIONEER FLUID DEHYDRANT

The ratio illustrated above shows why there are no dilution-of-refrigerant worries. TZ destroys moisture and neutralizes acid chemically.

Stability of Color

A refrigerant leak detector, whose color has faded after injection into a compressor, is as useless as a silent burglar alarm. Left on guard, it can't give warning!

Highside engineers had long realized that a top product must have a stable color that would withstand the beating of an extended stay in a refrigerating unit, before getting a chance to appear and tell its story. And then it must be glaring.

And so, when it was introduced to the critical eyes of the trade, it was appropriately named TRACE because, with its stay-red color, it can trace leaks of any refrigerant in any refrigerating system . . . new, old or reconditioned.

TRACE REFRIGERANT LEAK DETECTOR

TRADE PRICES *(Save 10% on case Lots)*

4 oz. bottle (48 bottles to a case)	$1.00
1 pint bottle (24 bottles to a case)	$3.00
1 quart container (12 containers to a case)	$5.00
1 gallon container (6 containers to a case)	$16.00

For tough-to-spot refrigerant leaks

Ask for Refrigeration Supply Jobber

HIGHSIDE CHEMICALS COMPANY

195 VERONA AVE. NEWARK 4, N. J.

You can cost overhead by the labor-hour and keep just as busy one period as the other; yet, even though you get back your overhead by this method because you use an accurate figure, you may show lower profits or no profits at the end of the next period, because you did not maintain the same profitable radio on labor and materials. Under Exhibit J, it was 1 to 3, under Exhibit K, 1 to 2. Keep this ratio in line with profitable experience figures on every estimate whenever possible.

Under Exhibit J, the maintenance man found that his overhead cost per labor-hour was $2. Under Exhibit K, he costed estimates for the succeeding period at $2 for the same number of labor-hours, but showed no profit at all.

The overhead ratio to sales is a method in common use, and is satisfactory if fixed according to experience figures and checked against the labor-hour method. Overhead does not always vary with selling prices in the same ratio. A job estimated at $50 does not necessarily carry only half the overhead expense of a job estimated at $100; but it will figure out this way if you cost overhead on the selling price. So test-check your figures with the labor-hour method to see that the time element is covered, because overhead on jobs varies with the time spent on them.

Suppose your prior-period figures are similar to those following:

EXHIBIT L

Sales	$1,000	100%
Labor and materials	600	60
Margin on sales	$ 400	40%
Overhead expense	300	30
Net profit on sales	$ 100	10%

Using these experience figures, assume that you figure overhead on an estimate based on sales, or 30%. Labor and materials, we'll say, figures $90, and this is 60%, according to prior-period figures, so 1% is $90 divided by 60, or $1.50. Overhead is 30%, so 30 times $1.50 is $45. The over-all cost of the job—$90 for labor and materials plus $45 for overhead expense—is $135.

In all cases illustrated, the desired net profit must be added.

The foregoing figures are not illustrative of any one refrigeration man's costs or profits. They are used merely to clarify the problems in overhead so that you can eliminate the bugs. The computation of overhead is manhandled by many refrigeration maintenance men to their loss, and these tables show why.

GRUNOW SERVICE . . .

Continued from page 32

rator and breaker strips between the liner and outer shell. The entire liner will now slip out with a little maneuvering. The splice can now be cleaned and soldered, and the lines and evaporator replaced in a reverse operation. Check Carrene charge and recharge and purge.

Another way is to remove the breaker strips and replace the cord assembly, coming over the top of the evaporator, and placing wire in the space between the liner and shell. At the bottom, drill a hole through to the machine compartment and connect at relay box or splice into original cable. The first way takes four to five hours, the second about 45 minutes. Take your choice!

Noisy Operation

Complaints of noise are very limited. Model "C" pumps are subject to noisy vanes due to the construction of the intake ports. The design was corrected in later models to remedy this fault. While the compressor is in operation, the vanes will clatter. The only remedy is to dismantle the pump and hone the edges of the vanes. Best policy on all compressor repairs is to return them to the factory.

The suction line will sometimes cause a heavy hum, but this can be remedied by shifting the position of the line. A motor hum or noisy compressor can be caused by air in the system or blocked condenser.

MODEL "D" (1934)

Nearly all the service complaints and their remedies as previously described will be applicable to Model "D" machines. This was the first hermetic machine manufactured by Grunow. The motor-compressor assembly has four mounting rubbers, a cast iron base and pressed steel dome that are bolted together. All later

STANGARD

Prime Surface

COLD PLATES

For Maximum Refrigerating Efficiency

THE STANGARD-DICKERSON CORP.

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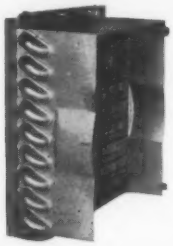
models have pressed steel bases and domes.

The early production had the same high side float as the Model "C", but later models were equipped with a small, horizontally mounted carrene meter. This was later superseded by a larger vertically mounted motor with better results.

Starting with the Model "D", all models were equipped with separate fans for cooling the condenser. The following service complaints are in addition to those listed previously:

A. *Long Running Time and No Refrigeration.* Since the cooling fan is of low horse power rating, lack of oil caused bad bearings and a decrease in R.P.M., with resultant heating of the unit. In extreme cases, the motor bearings would corrode and dry out and stall the fan completely. This usually resulted in the overload kicking out, or, in moderate weather, continuous running. Some of the earlier fans were two-phase, three-wire,



Condenser used on earlier "D" units had pressed-cap return loops. This was a major source of leaks.

but all replacements are two-wire. This necessitates a slight change in wiring.

In order to change the fan, remove the board and disconnect the wiring. Clean the lint and dirt that has accumulated around the condenser and compressor. If the mounting holes in the fan bracket are different from the original, the fan can be screwed to the board so that sufficient clearance is obtained around the periphery of the fan and the condenser shroud.

Looking from the front end of the box, the fan leads are connected to the second and fourth terminal of the relay box, reading from left to right. If Carrene charge has been drained when the board was removed, block the fan when starting the unit to prevent the loosened dirt from contaminating the carrene when refilling. Purge unit, as described.

B. *Low Carrene Charge.* On the earlier Model "D" units, the condenser was made of steel fins with the return loops consisting of a pressed cap. Much trouble was experienced through this condenser. Small leaks would occur at either the return bends or where the fins were joined to the tubes. Attempting to soft solder them usually resulted in a flare-back within a month or so. The only practical way is to replace the entire condenser with one of equivalent capacity and dimensions. Usually replacement condensers can be obtained from the factory.

Because of this trouble, it would be well to check all Model "D" units for leaks at this point, if short on Carrene. Since the bulb is on the right hand header in most cases, a slight undercharge of Carrene will result in a very cold box and long or continuous running. Do not condemn a control because of low temperature in the box. Check first to see if the entire right header is covered with frost. If in doubt, and the suction line is not cool, add about 4 to 5 oz. of Carrene, then check frost line.

(The fourth and concluding article in this series will appear in December.)

THE DFN System is *hard* on moisture, sediment and acid—but *easy* to install and service!

Factory-packed, hermetically-sealed DFN Cartridges—ready for use when wanted—are slipped into flanged DFN Shells. No danger of loose, non-uniform packing—no loss of dehydrating strength in servicing. The DFN Shell is used over and over again . . . you merely change inexpensive DFN Cartridges as needed.

And the DFN System gives complete, triple protection against freeze-ups, clogging and corrosion. The reactivated drying agent dehydrates and neutralizes. The exclusive DFN anti-sediment assembly covers the complete area of the cartridge outlet and inlet with multiple layers of wire mesh, bronze wool and felt . . . holds more sediment without pressure drop, filters to minute size. Ask your distributor or write us for Catalog R-7.

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Monel Brass Bronze
Refrigerant, Oil and Other Liquid Gases
Fabricated to Specification

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Only the DFN SYSTEM DEHYDRATES FILTERS NEUTRALIZES

DEHYDRATORS • STRAINERS FILTERS • NEUTRALIZERS

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Regulating Valves

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Automatic control and regulating valves for Freon, Methyl Chloride and Ammonia. A large variety of sizes and types available for practically any refrigeration requirement.

WL water regulating valves for Freon, Methyl, or Sulphur. 3/8" orifice and 3/8" FPT. Brass body construction. Large capacity—no chatter.

WP water regulating valves are available in 3/8", 1/2" and 3/4" FPT sizes. Brass body construction for Freon, Methyl or Sulphur. Easy adjustment.

WK water regulating valves are De Luxe Pilot Operated Modulating valves. Iron body, simple adjustment. Available in sizes ranging from 3/4" to 2" FPT.

WR regulating valves for Ammonia are diaphragm operated and highest quality corrosion resistant materials are used. Available in sizes ranging from 1/8" to 2" FPT.

Electrimatic valves are individually tested for efficient, economical operation. Trouble free performance.

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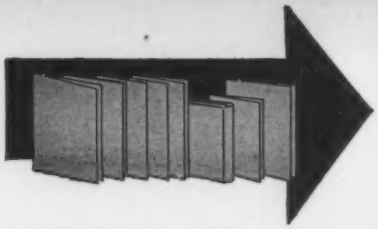

Useful Literature

The publications listed below are available to readers without charge. Simply list in the coupon at the bottom of this page the numbers of the items you wish to receive, and sent it to THE REFRIGERATION INDUSTRY, 812 Huron Road, Cleveland 15, Ohio. Your requests will then be forwarded directly to the companies concerned.

216—Locker Plant Data . . . A bulletin (145-F) issued by the Frick Co. describing the Frick-Knickerbocker line of refrigerated food locker plants. Editorial matter describes costs, service charges and arrangements of typical plants, gives specifications of Knickerbocker sectional food lockers.

217—Insulation Materials . . . A new 28-page industrial catalog, issued by Baldwin-Hill Co., describing in detail its full line of high and low temperature mineral wool insulation. Includes application specifications, conductivity curves, engineering data.

218—Blast Freezing . . . A sixteen-page illustrated booklet covering "Blast Freezing of Foods," issued by Carrier Corp. Reviews potentials in relation to meat packers, fisheries, fruit growers, dairies, wholesale grocers, locker plants, etc.

219—Soda Fountain Equipment . . . Descriptive literature and additional information on the 1946 line of refrigerated soda fountain and luncheonette equipment to be available from Bastian-Blessing Co. Equipment is said to embody 38 of the 40 features most frequently requested by fountain operators.

220—Protective Wrapping Compound . . . Technical service bulletin No. 14, available from Paisley Products, Inc., giving detailed information on its "Dip-Wrap" hot dip protective compound, an organic plastic material for wrapping metal parts for shipment. Material was widely used by military services. Primarily interesting to manufacturing concerns.

221—Replacement Seal Stock List . . . Replacement unit stock list No. 545, issued by Chicago Seal Co. Lists specifications of available seal replacement units, both standard and special types, as well as valve plate replacement information.

222—Electric Soldering Iron . . . A one-page sheet available from Hydra-Aire Appliance Division, detailing pertinent information on its recently-introduced "Hy-Temp" electric soldering iron. Various features are listed, as well as prices of units of available wattages.

223—Low-Temperature Cabinet . . . A four-page folder, issued by Authorized Refrigeration, detailing features of its new "Arctic-Temp" home freezer cabinet. Other data on the model is also available from the manufacturer. Units are said to be available for immediate delivery in limited quantity.

224—Tubing Tools . . . A handy tube-working tool selector is a feature of a new folder on tubing tools, available from Imperial Brass Mfg. Co. The folder (No. 347), lists data on such tools as tube cutters, benders, coil makers, pinch-off and swedging tools, reamers, refacing tools, and soldering equipment. A number of tool kits also are described.

225—Assembly and Repair Tools . . . Information on its "Jotee" and "Joel" torque wrenches, originally developed for aircraft assembly and repair service, and said to be adaptable for use in refrigeration and other appliance fields by manufacturers now reconverting to these fields. Available from Jo Mfg. Co.

MAIL THIS COUPON FOR FREE LITERATURE

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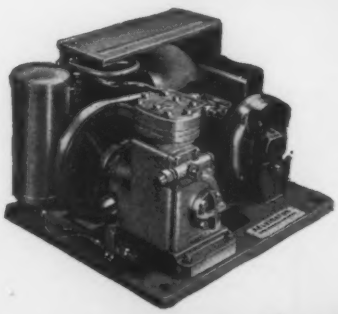
11-45

Customer: *"What's going on here?"*

Proprietor: *"Just the Turkey Trot! They're celebrating the installation of our new Kelvinator Condensing Unit!"*

A celebrated name in the industry... Kelvinator stands for 30 years of outstanding leadership in commercial refrigeration. Kelvinator Condensing Units are known for more dependability, more economy, more performance!

Good reasons why progressive service men always specify Kelvinator.



Kelvinator

DIVISION OF NASH-KELVINATOR CORPORATION, DETROIT

CONDENSING UNITS

SEALED • OPEN

FOR YOUR HOME—REMEMBER KELVINATOR REFRIGERATORS, ELECTRIC RANGES, WATER HEATERS AND HOME FREEZERS

Here is the groove in Imperial Triple-Seal Fittings that brings you new, extra protection against leakage in refrigeration tubing connection work. When the flare is drawn up against this groove the copper tubing is extruded into the groove making a tight, Triple-Sealed joint. This joint will remain LEAKPROOF even though the face of the seat may be nicked or marred.
The flare extrudes into groove making leak-proof joint
Flats are placed on elbows and tees. This gives a wrench hold, eliminating the possibility of distorting the body in gripping the fitting, and also speeds up work materially.
The threads and seats of Imperial Flared Fittings are protected against possible damage before use by a protecting sleeve as shown here.
Tees, nuts, elbows and crosses are made from brass forgings. This assures a fine grain structure, freedom from internal stress and high tensile strength. Female couplings and cap nuts are made from extruded bronze rod not subject to season cracking.
When you use
IMPERIAL
TRIPLE-SEAL Flared Fittings
you get all
these important features
IMPERIAL
THE IMPERIAL BRASS MANUFACTURING CO.
536 South Racine Ave., Chicago 7, Illinois, U. S. A.

Continued from page 27

cooling, but had the added disadvantage of frequent re-icing on long trips. (This latter is also true when using ice).

With the tremendous growth being experienced in the frozen food field, thousands of refrigerated trucks for city deliveries and highway transport will be required to satisfy the demand. These trucks will surely be equipped with mechanical units.

Just what does all this mean to the refrigeration industry? First, there is hardly a branch of the industry that will not benefit from this growing new business. As an example, let us assume that a certain manufacturer of mobile equipment buys all the components that go into its unit except the gasoline engine, which it builds. When one considers all the various components that go into a truck unit, exclusive of the gasoline engine, it can readily be seen that suppliers of these components represent almost all branches of the refrigeration industry.

A New Income Source

Secondly, this type of equipment will provide a heretofore unknown source of income for the service contractor. The service problems encountered in mobile equipment are much the same as with any other type of commercial refrigeration equipment, with the exception of the gasoline engine and its automatic control apparatus. Service contractors who plan on maintaining mobile units will do well to become thoroughly acquainted with all aspects of this type of equipment. Most manufacturers have prepared service manuals that can be obtained for the asking.

Mobile equipment manufacturers also must have a sales outlet for their product. In some instances, this has meant a new line for existing distributors of commercial refrigerating equipment. In still other cases, due to its specialized nature, new distribution outlets have been created. However, a leading—and logical—sales outlet for this equipment is through the manufacturers of trucks and/or trailers, who already have their sales organizations in the form of factory branches, distributors and dealers with their individual salesmen.

When this latter distribution method is used, it becomes imperative that the selling organization render service on the product it sells. This will create many new jobs for service engineers. Returning war veterans who are skilled in service and maintenance work on the mobile refrigerating equipment used by the armed forces will be in heavy demand.

Some of the large trucking companies who operate at least 25 refrigerated trucks will have their own service engineer to care for this equipment. Here again is another opportunity for the service engineer.

Trend to Package Units

The present design trend of truck units is toward the self-contained or package types that are removably installed. This feature allows the unit to be completely assembled and tested at the factory, and eliminates any field hook-up or testing. This type unit can also be removed for major servicing, while a replacement unit may be installed so that the truck will not be idle while the defective

Service Engineers Should Know . . .

That the markings on the shoulder of each refrigerant cylinder reveal five important bits of information.

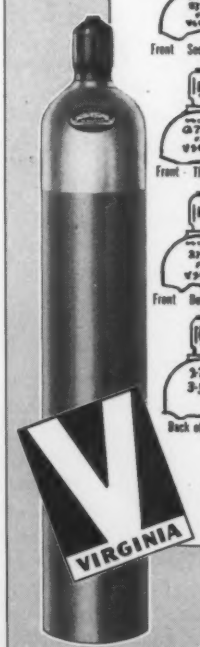
I. C. C. shipping container classification. This particular number (I. C. C. - 4B - 300) authorizes transportation of Sulfur Dioxide, Methyl Chloride, and certain other low pressure refrigerants.

This is the serial number which is used to identify the cylinder for all normal record purposes.

The letter in this position on the cylinder indicates the name of the company which manufactured the container.

These letters identify the registered owner of the container. (If complete identity of Nos. 3 and 4 row is ever required, write: Bureau of Explosives, 50 Vesey Street, New York, New York.)

Hydrostatic test date markings. The top symbols indicate a previous test date, the bottom symbols the last test date. Figures at the left indicate the month, the Letter "T" means "Hydrostatically tested"; figures at right, the year the tests were made. The law says cylinders be tested once every five years.



Manufacturers of "Virginia" Refrigerants and Agents for Kinetic's "Freon-12"—"Freon-22"—"Freon-11".

VIRGINIA Smelting Co.

WEST NORFOLK, VIRGINIA

76 BEAVER ST., NEW YORK 5 131 STATE ST., BOSTON 4

"CLEAN-A-COIL"

FOR
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WATER COOLED
CONDENSERS,
COOLING COILS,
EVAPORATORS.

NOT CLASSIFIED AS
CORROSIVE LIQUID

Write for Descriptive Literature or Consult Your Local Jobber

Standard Solvent Co.
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Why the Trend Is Strong to CHICAGO SEALS and VALVE PLATES

Chicago Seals and Valve Plates make a better servicing job on all refrigerators, in less time, at less cost, at more profit . . . and more service men and more jobbers are finding out this fact every day.

CHICAGO SEAL CO.
20 North Wacker Drive, Chicago 6, Ill.

unit is being repaired.

The previously mentioned Trail-Aire Conditioner is of this type and is installed in the front end of the trailer body. Although installed in this protected out of the way place, the unit is readily accessible for minor servicing through two service doors in the front wall of the trailer; for semi-major servicing, the vertical insulated bulkhead that separates the condensing unit compartment from the trailer interior may be removed to provide access to all components in the unit compartment. All possible consideration has been given to the design of the conditioner so that it can be serviced with the least possible effort.

Cooling is Conventional

When this unit is being used to cool, it functions like any conventional refrigerating machine. That is, the refrigerant absorbs heat in the evaporator at a relatively low temperature, thereby cooling or removing heat from the air in the trailer. The heat-laden refrigerant is removed from the evaporator by the compressor, which compresses it into the condenser where the heat is dissipated to the atmosphere.

For heating the trailer interior, the above process is reversed. By closing three hand valves (painted white) and opening three hand valves (painted red) the refrigerant cycle is reversed, so that the condenser will function as an evaporator and the evaporator becomes a condenser.

The heating feature of the Trail-Aire unit provides protection for perishables that cannot be alowed to freeze. Other than foods, these perishables include acetic acid, shoe polish, furniture and automobile polish, and other items too numerous to mention here.

Servicing Reminder

Refrigeration service contractors who attempt to service this equipment should bear in mind that if the unit is on the heating cycle, they must regard the conventional condenser as an evaporator, taking into consideration the temperature of the air passing through this coil in looking for low-side troubles; at the same time, the conventional evaporator must be regarded as a condenser.

In conclusion, much of the success enjoyed by builders of truck refrigeration units is due to the improved body designs being built by the truck and trailer manufacturers. These improvements include better insulating materials, thicker insulated walls, frost breakers and light weight structures.

CHICAGO SEAL ISSUES REPLACEMENT UNIT LIST

Replacement unit stock list No. 545 has recently been published by the Chicago Seal Co., describing Chicago seals and valve plates.

The stock list includes information on stock numbers, makes and models, sizes, and the list prices.

McCRAY CONSTRUCTING NEW FINISHING PLANT

Construction of a new finishing building at the McCray Refrigerator Co.'s plant in Kendallville, Ind. marks the final stage of the company's expansion and modernization plans. The new building is scheduled to be completed about Jan. 1.

E. C. PANGBURN DIES

E. C. Pangburn, manager of the refrigeration and air conditioning department of the International General Electric Co., Inc., died suddenly during the night of Sept. 6 at his home in Montclair, N. J. He joined the General Electric Co. in 1908 as a member of the foreign department, and later helped pioneer the refrigeration and air conditioning activities of his company in 1928.

F. M. Slasor, manager, refrigerator sales, Edison General Electric Appliance company, examines high-humidity storage compartment in Hotpoint Doric EB-7 refrigerator, first model made since 1942. He said models will be available for consumers "in limited quantities" before Christmas.

ample, in the store in question, three butchers cut, weigh and price meat for the self-service cases. Wrapping and sealing are done by women. who also clean, weigh and wrap for self-service all but a few vegetables—items like potatoes, onions and cabbage. Cooked food items are prepared in a kitchen, and include meat pies, gelatin desserts, cooked prunes and pickled beets.

The store uses 14 refrigerated self-service cases, four for vegetables, four for meats, and six for dairy and delicatessen foods. Two of the vegetable cases display pre-packaged items, the other two unpackaged produce. One of the self-service meat cases is used to display roasts and roasting chickens. Another holds steaks, chops and frying chickens; the third, self-service pork items (smoked and fresh), and the fourth is used for miscellaneous cuts and ground meat.

Dairy and delicatessen cases line up, display-wise, as follows: 1. packaged salads, baked beans, spaghetti;

Chain Store Age

"The self-service department stops at this line, madam!"

2. peanut butter, bulk jam, gelatin desserts; 3. cheese; 4. cottage cheese, tamales, chicken turnovers, and similar foods; 5. lunch meats; 6. fresh and smoked fish. Each case has a reach-over glass front display compartment, about waist-high, and sloping mirror backs reflect the merchandise.

Each case also has its own condensing unit, allowing temperature to be set in keeping with the items being displayed in each particular unit.

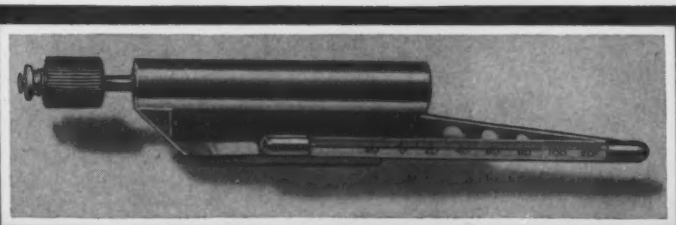
Those are figures for a larger store operator—but, you say, how about the smaller merchant, who may need one or two cases, or who may want to combine self-service with conventional refrigerated fixtures in perhaps only one department? Well, here's one such experience:

The two stores operated by the company increased sales volume from about $3000 per month each to an average of about $15,000, or an increase of two and one-half times. In the meat department, where the self-service case was used in connection with service meat equipment, sales increased $1100, despite meat shortages and rationing.

Most of the increase came through sale of luncheon meats, weiners, picnic hams, smoked fish, etc., and a wide assortment of cheese. Sales of cottage cheese, for instance, went from 15 to 100 pints a day after installation of self-service equipment.

These are only isolated instances. The facts are there, and the field is waiting. Refrigerated self-service market equipment can—and will—be a "big-ticket" item for the alert commercial refrigeration operator.

THE *QUICK-CHECK-UP* INSTRUMENT
for every
SERVICE AND SHOP MAN



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features

1. Indicates quickly cut-in and cut-out temperature.
2. Does not require removal of control from cabinet.
3. Eliminates un-warranted tampering with thermostatic controls.
4. Shows customer defective part.
5. Scientifically designed for easy operation.
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(MODEL A100) $19.50

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The green light in metals... Revere has them NOW

Revere knows well how precious to the nation each of these post-war days can be, and how crippling to industry and employment could be a shortage of essential metals. That is why, since V-J Day, Revere has been in full production for peace.

Fortunately, Revere metals can serve the needs of creating as well as those of destroying, can make as fine bathroom fixtures as bomb fuses, as excellent radiators for automobiles as for half-tracks. No difficult reconversion problems have stifled the outpouring of Revere metals.

Revere copper, brass, bronze, aluminum, magnesium, steel, are ready *now*, are already busy in thousands of plants helping shorten the period of reconversion for industry and for the nation.

We are able and eager to do more. One inevitable result of Revere's war effort has been that not only our ability to produce, but our ability to give service, have been expanded many times. Revere research has probed further and deeper. Revere Technical Advisors are armed with greater knowledge and experience. New methods, metals and machines may save precious time or cut all-important cost for users of our metals.

In all these ways Revere is ready *now* to serve the manufacturing and building industries to help you prove *immediately* that America is even greater in peace than she proved to be in war. In the same way Revere is ready to serve home owners with its building products which are stocked by Revere Distributors in all parts of the country.

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Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.; New Bedford, Mass.; Rome, N. Y.

Sales Offices in principal cities, Distributors everywhere

Revere District Sales Offices are located in the following cities:

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Cincinnati, O.	Cleveland, O.	Dallas, Texas
Dayton, O.	Grand Rapids, Mich.	Hartford, Conn.
Houston, Texas	Indianapolis, Ind.	Los Angeles, Calif.
Milwaukee, Wis.	Minneapolis, Minn.	New York, N. Y.
Philadelphia, Pa.	Pittsburgh, Pa.	Providence, R. I.
St. Louis, Mo.	San Francisco, Calif.	Seattle, Wash.

The Revere Office nearest you is at your service.

WESTINGHOUSE TO PRODUCE IN MEXICO

Formation of a $10 million company which will produce Westinghouse appliances under a licensing arrangement at a plant near Mexico City is now underway.

Known as Industria Electrica de Mexico, the new company will be financed by both United States and Mexican interests, the latter being offered 51% of the stock. An agency of the Mexican government will also subscribe for an additional $5 million in bonds.

Westinghouse Electric International Corp., a subsidiary of Westinghouse, will hold less than 10% of the new firm's total capital.

In addition to refrigerators and home radios, the Mexican plant will produce other household appliances, small pumps, motors, and generators. Westinghouse will receive royalties on these products.

The present Westinghouse sales organization in Mexico, which has been operated for about 10 years, will be taken over by the new concern.

Luis G. Legerreta, director general of the Banco Nacional de Mexico, will be president, and Jose R. Bejarano, formerly with the Associated Companies Department of Westinghouse International, will be general manager.

QUILLEN BROTHERS CO. AWARDED ARMY-NAVY "E"

Quillen Brothers Refrigerator Co., Indianapolis, has been awarded the Army-Navy "E" production award for excellence in war production.

Prior to the war Quillen Brothers was well known in the commercial refrigeration industry and had begun the manufacture of home freezing cabinets. At the outbreak of the war the company was commissioned to manufacture portable refrigerating units for the armed forces, and its entire production throughout the war was devoted to this.

Presentation ceremonies were held Oct. 10 at Municipal Gardens in Indianapolis. Clarence Quillen is head of the company and Stanley C. Bell is general manager.

The company plans to manufacture an improved home freezer and other frozen food commercial units, including self-serve display cases and storage equipment.

THE PRACTICAL Refrigeration Engineering MANUAL... by Harold Smith

X. Apple Storage

PART II

IN APPLE storage the problem of refrigeration involves first, the heat leakage through the walls, floor and ceiling; service load, consisting of loading and unloading cooler, employees working in the coolers, electric lights, together with any other items of heat within the refrigerated space; and the products load.

At the time of the year apples are usually harvested, and particularly where they are grown in the northern section of the country, the temperatures run usually around 60°F. or lower, and the apples, of course, would be at a similar temperature.

However, in the late fall, the temperature rises in the middle of the day, sometimes up to 75 or 80°F., and for this reason an effort is usually made to pick apples in the early morning hours and prepare the apples in cool places and put them in storage before the heat of the day.

CAUSES OF DECAY

While there are several causes for decay of apples in storage, if care is used in the handling of the apples, and if they are placed in storage in open type crates or bushel baskets, they usually remain in good condition for a long period of time. It is further the opinion of many apple growers that placing apples in storage under proper refrigerated conditions, improves the texture and quality of the product, enabling them to place the apples on the market in a more desirable condition than when they were first picked. It is essential that the natural moisture of the apple be retained, so humidity enters very definitely into the program of refrigeration requirements.

Apples are stored at temperatures ranging from 31°F. with 80% humidity, to 35° with 86 to 88% humidity. In most instances, a 35° temperature is entirely adequate and sometimes is preferred to the lower temperature from a standpoint of maintaining the natural moisture in the apple.

It is usually advisable to use forced draft air convection in the cooling of apples, since this produces faster cooling and more equal distribution of temperature throughout the cooler However, the cooling is sometimes done with gravity convection, finned coils, or by circulating brine through pipe coils. Many installations also are made with ventilating systems which enable a change of air to be made within the cooler after it has been filled with the products load and during the period when the doors to the cooler are not frequently opened.

THE PRODUCTS LOAD

The apple products load consists of removing the sensible heat from the apples and also handling the heat of respiration, which is the development of the enzyme action or ripening of the apples.

For easy figuring, this heat of respiration is usually around 20% of the sensible heat load. It is very important to include this figure in your load estimate in order to arrive at an ample amount of refrigeration capacity. The specific heat of apples above freezing is .708 B.T.U. per pound. Apples weigh 50 pounds to the bushel, which would mean approximately 40 bushels to a ton.

In setting up the load requirement figures for apple storage, it is first necessary to figure the heat leak and service load. This is done in the usual manner, as outlined in detail in an earlier

PEERLESS RETURNING TO CIVILIAN PRODUCTION

Peerless of America is now engaged in putting all its productive facilities at Marion, Ind., into production on refrigeration and air conditioning coils and various other items of refrigeration equipment.

During the war the Peerless company was engaged 100% in production of items for the military, having produced more than 6 million shells, and other items such as oxygen regulators, air diluters, and gasoline segregators. All war contracts have been terminated.

For many months, however, Peerless engineers and production men have been active in redesigning old products, and in experimental work on new products. Some production lines were also started for civilian products.

Peerless is now in production on the following refrigeration products which it made before the war: the 3-inch fin coil, flash cooler finned and plain cube maker, capacity booster, Thermek coils, and expansion valves.

New products now being readied for production include new-type unit coolers, wall-type blowers, dometype blowers, a new kind of expansion valve, and a new kind of cold plate.

Peerless has also developed a new air-cooled condenser, which it is now producing on a large scale for original equipment manufacturers only. A special conveyor-type production line was set up to produce these condensers.

Other items in the process of development at Peerless will be announced at a later date.

The Peerless general sales office will be located in the company's Chicago office at 333 N. Michigan Ave., and will be headed by M. W. Knight, assistant to the president and general sales manager. Walter A. Honeychurch will be factory sales manager, handling all orders and contact with the plant operation at Marion, Ind.

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chapter of this series. The service load is also figured as outlined in the chapter covering this part of the work. To these figures are added a products load which, after allowing for the safety factor, gives the entire refrigeration load on the particular apple storage job being considered.

The initial cooling load, when the apples are first placed in the cooler and are cooled down from the outside temperature to the storage temperature of 35°F., is the heavy part of the apple storage load. If all the apples are placed in storage at approximately the same time, once the initial cooling has been taken care of, the remaining products load requirements are very light until the apples are moved out.

LOADING TIMES VARY

If the apples are brought in at several different periods, it is necessary, of course, to figure the initial cooling down for the product at each period when new stock is placed in the cooler. As a general rule, however, once apple picking starts it is completed as quickly as possible, and the loading of the cooler is usually done over a period of comparatively few days.

While it is considered advisable by authorities on apple storage to remove the initial heat from the apples in the four-day period after stocking up of the cooler, it usually occupies a week or 10 days. The actual period for pulling down the initial temperature runs anywhere from eight to 12 days, and should be considered on that basis.

TYPICAL INSTALLATION

In order to illustrate a typical example of load requirements, we will consider that the apple storage cooler with which we are concerned is 20 feet long, 10 feet wide and 10 feet high, and is insulated on all walls, floor and ceiling with 3 inches of insulation. The average outside temperature during the cooling period would be 60°F. and inside the cooler the average temperature would be 30°F., giving a 30-degree temperature differential. The cooler would have 1000 square feet of surface.

This, multiplied by the "K" factor for 3 inches of insulation, multiplied by the temperature difference, or 30, would give a total heat leak B.T.U.-per-hour-load of 3000 B.T.U. Using Table D (Chapter II) for service load and factor for light service on a cooler of 1000 square feet or more, which is 3.5, multiplied by 1000 square feet we have 3500 B.T.U. per hour service load. Our total heat leak (3000 B.T.U.) and service load (3500 B.T.U.) would amount to 6500 B.T.U.

LOAD CALCULATIONS

The products load, based on the cooling of 2000 bushels of apples in an eight-day period, cooling the apples from 60°F. to 35°F., which would represent a reduction of 25° degrees temperature, would work out as follows: 2000 bushels of apples, weighing 50 pounds to the bushel, would represent 100,000 pounds or 50 tons.

Taking the 100,000 pounds, multiplied by the specific heat of .708, and this total in turn multiplied by the 25° temperature drop, would give a total sensible heat load for the cooling of 1,770,000 B.T.U. If we figure the heat of respiration at 20% of the sensible heat load, this factor would represent 354,000 B.T.U., making a total head products load of 2,124,000 B.T.U. to be cooled in an eight-day period; 265,500 B.T.U. per 24-hour day, or 11,063 B.T.U. per hour.

To be continued next month.

REFRIGERATIVE SUPPLY OPENS TACOMA BRANCH

Refrigerative Supply, Inc., supplies jobbers with headquarters in Seattle, Wash., has opened a new branch office in Tacoma at 1113 Tacoma Ave. This addition brings Refrigerative Supply's total number of outlets to five, branches being located in Portland, Ore., Spokane, and Vancouver, B. C. in addition to the headquarters location. Harold G. Sterns heads the company.

WIDER CREDIT SERVICE MAPPED BY REMA

Plans for an expanded credit service for members of Refrigeration Equipment Manufacturers Association were outlined at the Association's recent board of directors meeting in Marinette, Wis. by F. Z. Zimmerman, chairman of the credit committee.

One of the new elements in the plan is a proposal for producing a "paying guide," which will provide a history of the activities of the accounts which Rema members sell. This paying guide is to be produced in the office of R. K. Hanson, Rema executive secretary.

OPA CLEARS WAY FOR NEW UNITS PRICING

In an action clearing the way for issuance of a reconversion pricing regulation for postwar manufactured household mechanical refrigerators, tht Office of Price Administration reworded the two existing refrigerator regulations to confine their coverage to units manufactured before July 1 of this year. The action was effective Oct. 10.

Of the half million unused refrigerators made subject to an inventory freeze early in the war by the War Production Board, about 15,000 remain in the nation's stockpile, OPA said. When these are released for general sale, they will remain subject to the two existing regulations—one for manufacturers and one for distributors and dealers — governing sales of new household refrigerators. Revocation of these regulations may be expected soon after the frozen stockpile is released since the demand for refrigerators is widespread and the number of prewar models is very small. If any modifications in the regulations are needed before revocation, they will be made by special orders, OPA said.

Refrigerators manufactured after July 1, 1945, will be covered by a new regulation to be issued shortly.

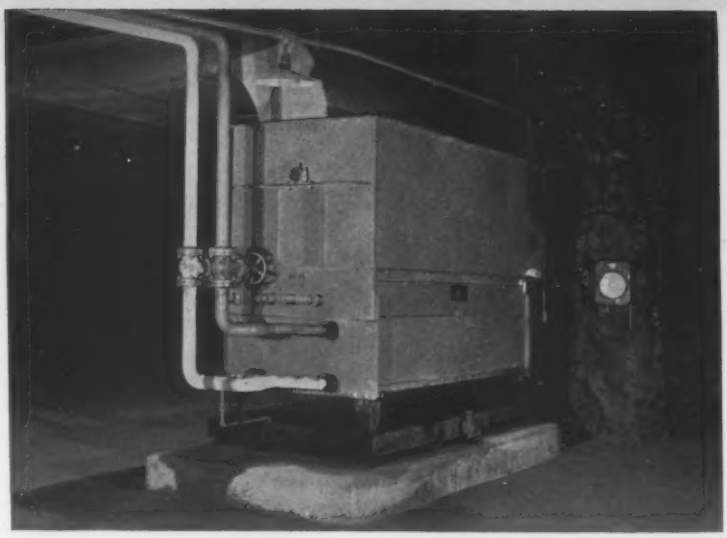
PRICE INCREASES ON CONTROLS, MOTORS OK'D

An industry-wide price increase factor of 5% was established by OPA for use in computing reconversion ceiling prices for automatic electric temperature control equipment. The action was effective Oct. 9.

Through establishment of this factor, both manufacturers and resellers of automatic electric temperature controls for all heating, air conditioning and refrigeration except industrial processing controls, may calculate their new 1945 ceiling prices by adding 5% to their pre-war prices.

In the case of manufacturers, present ceiling prices are those at which individual producers delivered or offered to deliver equipment on Oct. 1, 1941. Resellers' present maximum prices are the highest prices they charged during March 1942.

An increase of 9% of producers' ceiling prices for fractional horsepower motors was announced, effective Oct. 16. Resellers of motors also may increase their prices by 9%.



THE famous War Food Administration refrigerator-cave at Atchison, Kan. is the largest cold storage plant in the world, comprising about 9 million cubic feet of refrigerated space. The natural cave temperature of about 55°F. has been reduced to a few degrees above freezing by the installation of 48 Niagara fan coolers, manufactured by the Niagara Blower Co., Buffalo, N. Y. Each handles 19,000 C. F. M. of air and is rated at 13½ tons refrigeration capacity based on the circulation of brine at a temperature of 20° F. through the cooler coils.

Three compressors, each of 250 tons rating, furnish refrigeration for chilling the brine. The Niagara coolers, like the one illustrated, are located at intervals through out the cave and are furnished with short air ducts to provide the uniform distribution of cold air. The total air handled is nearly a million cubic feet per minute. Installation was made by J. F. Pritchard & Co., contractors, of Kansas City, Mo.

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Aminco Oil Separators protect compressors by maintaining correct oil level in crankcase and by excluding oil from refrigerant stream they enable coils, condensers, valves and dehydrators to function most efficiently.

These oil separators are made for jobs from 1/3 H.P. to 120 tons and are used everywhere, ashore or afloat, where efficient refrigeration is desired.

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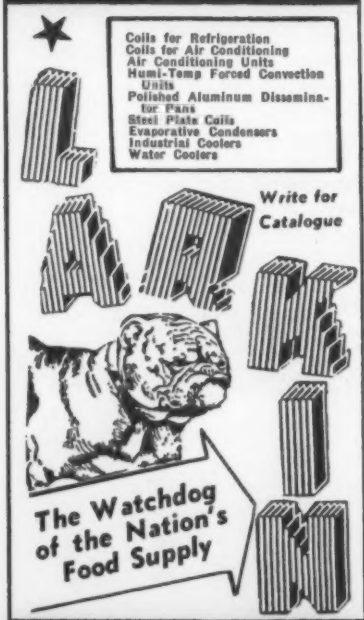

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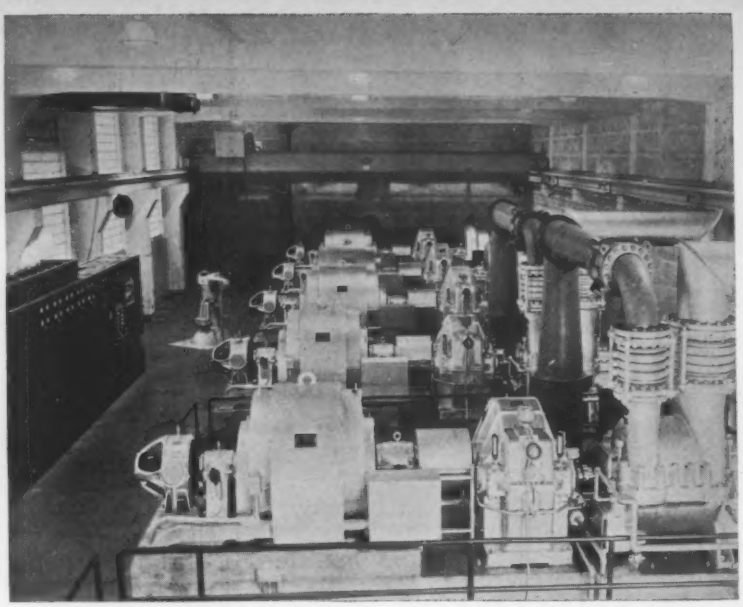

The "refrigeration room" at the Aberdeen wind tunnel laboratory.

HUGE CENTRIFUGAL UNITS POWER 'SUPERSONIC' TEST EQUIPMENT

FIVE huge centrifugal compressors are key equipment in the operation of the world's largest supersonic wind tunnel laboratory, where man-made winds blowing at speeds greater than 1,300 miles an hour can be produced. These compressors aid Army ordnance experts in studying the behaviour of bombs and projectiles travelling faster than sound—about 770 miles an hour.

Bombs dropped by the high-flying B-29's often attained such speeds, and the wind tunnel studies increased the effectiveness of the raids on Japan.

Formerly, bomb action in flight was tested by actually releasing bombs, but difficulties of field measurement limited the accuracy of the results. In the new wind tunnel at Aberdeen Proving Ground, Maryland, scale models of bombs—which can be nearly a foot long—are held in place by a special mounting while the speed of the air is varied.

To produce such high velocity winds in the test boxes, which are a little over a foot wide and two feet long, requires a complex network of pumps, motors, compression tanks and pipes, and dials, ranging from a 32-foot diameter sphere outside the three-story laboratory building to delicate precision measuring instruments.

The air to be forced through the test boxes is first cleaned and dried, and then stored under pressure in the large sphere. When a test is to be made, the five Carrier compressors, mounted in a large room resembling the engine room of a ship, take the clean, dry air from the tank and force it through a nozzle, or throat, under terrific pressure.

The compressors are operated by motors developing 13,000 H. P. from a 110,000-volt power line.

Tests may be made at different speeds by inserting nozzles of different sizes or shapes. Heavy glass observation ports on the test boxes enable watching scientists to note the effect of speed variations on lift, drag and righting moment, which is concerned with the projectile's true flight or stability, as indicated by whether it yaws or tumbles. In addition to observations through the ports and by microphones, a Schlieren camera takes pictures at four-millionths of a second.

One of the first tests made in the wind tunnels at Aberdeen paid off the entire cost of the $2,000,000 laboratory by disclosing unsuspected operating defects in a newly designed bomb about to go into mass production. Two days later, a modified design proved satisfactory.

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Automatic Temperature Controls

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Here's How It Works:

CONTRACTED

At left is a cross-section of the diaphragm and part of the liquid-filled capillary. The liquid has contracted, the diaphragm moving inward, causing the switch to function.

EXPANDED

In view at left, the liquid charge of the capillary has expanded with a rise in temperature. This positive force moves the diaphragm outward and causes the switch to function.

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CONTRACTORS

News • Activities • Plans

IT'S HIGH TIME

From all four corners of the country have come many conversational attempts to form the refrigeration contractors into a strong, cohesive national organization. There always have been many good reasons why such an organization would be highly desirable, but like all such things, everyone pays lip service to the idea but no one ever does anything about it.

Now, Ray Kromer of Cleveland is doing something about it. Mr. Kromer, who did such a splendid job during the war as Director of the National Refrigeration Service Council, saw a great need for such an organization as he went around the country.

Since that time he has been in touch with many groups and accordingly he is "taking the bull by the horns" and calling a meeting at the Palmer House, in Chicago, on December 10 and 11, to complete the formation of a National Contractors Association.

Ray has consented to start this organization job purely as a service to the industry. He wants it distinctly understood that after the organization has formed, he hasn't the time to take an active part in its management. Ray gave so much time to the government in his previous work that he rightfully feels that he should devote his time mainly to his own business.

He would like to have a big attendance of men who are qualified to join such an association, and particularly would like to have already formed groups contact him at his office at *1835 East 24th Street, Cleveland, Ohio.*

Irving B. Hexter

Detroit Association Holds Annual Dinner Meeting

Annual dinner meeting of the Refrigeration Contractors Association of Detroit was held Sept. 19 at the Hotel Statler.

New officers and directors were elected as follows:

President, William G. Euth, Euth-Lambrecht Co.; vice president, B. G. Hyatt, Copeland Authorized Refrigeration Service. Raymond M. Shock continues as executive secretary.

Directors include (in addition to Messrs. Euth and Hyatt) John Duncan, Duncan & MacNichol; A. C. Ellerbusch, Refrigeration Service, Inc.; Theodore Hutteman, Detroit Ice Machine Co.; G. L. Johnston, Johnston Refrigeration Construction; J. P. Lindsay, Ace Refrigeration Service; W. F. Mercier, Mercier & Spalding; Chris Milazzo, Automatic Refrigeration Service; G. C. Murphree, Refrigeration Maintenance Corp.; J. E. Perry, James Perry Refrigeration; C. D. Young, Day Refrigeration Service.

Dealer-Operator Combination Makes Effective Sales Team

An effective locker plant selling combination—that of a locker operator and a refrigeration man—is the one worked out by Harry Spear, Danville, Ill. (the refrigeration man) and Ralph Widney, Covington, Ind. (the locker operator). The pair, operating under the name of Zero Engineering, has installed several plants in the Illinois-Indiana territory this year.

One of the principal values of the combination is that it brings to the prospective locker operator the experiences of an actual operator in plant layout, plus the experience of a competent refrigeration man in mechanical equipment.

At present, the company is completing installation of two plants in Indiana—one at Carmel, the other at Veedersburg. Installation also was recently started at Rossville, Ill., on a plant for W. T. Cunningham.

Mr. Spear, the refrigeration man in the partnership, has a background of some 20 years in refrigeration contracting work.

Who Is a Contractor?

The Refrigeration Contractors Association of Northern California defines a "refrigeration contractor" as follows:

> *"Any person or firm who holds himself or itself out to the public, or a substantial portion thereof, to contract for the installation, repair, service or maintenance of refrigeration equipment and appurtenances."*

With the contractor movement gaining ground in major cities all over the country, we offer this definition in the belief that it will be of value to those organizations now forming, and who may be in some doubt as to exactly what firms should qualify for membership.

Detroit Approves New Refrigeration Code

A municipal refrigeration code regulating the design, construction, installation, and maintenance of all refrigerating systems in the City of Detroit went into effect Sept. 27, following approval by the Common Council.

The code was originally introduced in September of 1939, following a series of open meetings between the city's Department of Building and Safety Engineering and representatives of users, manufacturers, contractors, and other agencies. Since 1939 there have been more conferences, resulting in some change in the code as originally submitted. The war, however, has been the chief cause of delay in its enactment.

In addition to setting up regulations governing refrigeration and air conditioning installations, the ordinance provides for licensing of con-

tractors, permits for the larger installations and repair jobs, and a schedule of inspection of systems.

Perhaps the most important change in refrigeration practice in Detroit which may result from the new code is the tightening of requirements for qualification as a licensed refrigeration contractor.

Formerly a person had merely to answer a questionnaire, which could be done, Detroit contractors say, by some people who could not really qualify as contractors.

Must Prove Status

The new ordinance requires proof that the individual has actually had three years experience in installation of servicing of refrigeration systems, or is a graduate engineer with one year's actual experience, before a license will be issued.

NOW it's murder, quick-frozen. For the mystery-story writers have finally succeeded in adapting this form of refrigeration to their own profitable purposes.

Quick freezing forms an important part of the plot in a recent novel, "Let Skeletons Rattle," by Frederick C. Davis, a Crime Club book published by Doubleday Doran & Co.

In this thriller a corpse, naturally deceased, is quick frozen in a home freezer for about three weeks and then thawed out to give the impression that the victim had just died. It's all part of a dastardly plot to effect an inheritance fraud.

Persons who wish to establish a contracting firm do not necessarily have to meet these qualifications themselves, but if they can't, they must employ some one who can qualify in order to obtain a license.

Fire Rules Eased

An important change in the code as it was finally approved, as compared with its form as introduced in 1939, involves relaxation of regulations calling for automatic fire dampers in "direct" air conditioning systems employing 50 or more pounds of the following refrigerants: carbon dioxide, Carrene No. 1, Freon-12, Freon-21, Freon-114, and Freon-11.

The final version of code now differentiates between size of the space conditioned if the system is "direct," i.e. evaporator coils cool the air directly instead of first cooling brine or water which then cools the air.

On 50-ton or higher direct systems using the above refrigerants in public assembly, residential, and commercial occupancies, fan controls and dampers may be omitted if the space to be conditioned is 1,000 sq. ft. or less floor area.

If the space is between 1,000 and 5,000 sq. ft., fire dampers only must be provided to cut off the refrigerant-containing part of the system from the ducts. Above 5,000 sq. ft. of floor area, both fan controls and automatic fire dampers must be used.

California Contractors Incorporation Completed

The Refrigeration Contractors Association of Northern California recently received its charter as a nonprofit corporation, and has been granted tax exemption by the State Franchise Tax Commissioner. The association recently condensed and reproduced the main purposes of its organization as shown by the articles, and is finding this material helpful in promoting interest among other firms in the industry.

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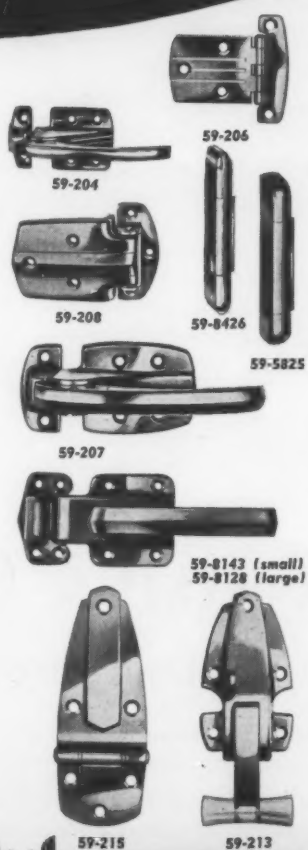
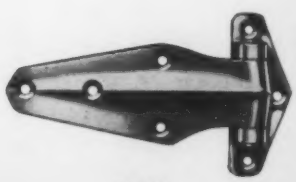
An attractive set of stock Refrigerator Hardware is now available through your Jobber. This standard line will harmonize and be in good taste with the design of refrigerators, coolers and cabinets.

Because we are the largest manufacturer of Refrigerator Hardware in this country, we are supplying your Jobber so he can serve you without delay. Consult him for prices and other information.





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STERLING REFRIGO GEL

INERT
No chemical reaction. Harmless to metals, alloys.

UNIFORM
Retains its carefully controlled particle size.

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No clogging of screens.

TESTED
Designed, processed and tested for refrigerant dehydration.

DOUBLE DUTY
Adsorbs moisture; prevents corrosion.

UNIVERSAL
Effective with all types of refrigerants.

A SUPERIOR SILICA GEL PRODUCT

for Factory-Charged Dehydrators or Bulk Refills

● Here is the ideal drying agent for use in refrigerator plugs. It has been carefully processed from superior quality Silica Gel to meet the exacting requirements of the refrigerating industry. Acts instantly to adsorb moisture. Maintains its uniform crystal size without powdering or caking thus preventing the refrigerant from channeling. Noted for its long-term dependability and uniformity. Inquiries invited from distributors and jobbers.

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backlog is sufficient to operate existing facilities for some time, but with newly purchased production equipment the company will be "in a receptive mood for new business very soon."

Mr. Brunner pointed out that developments in the past four years have had a major effect on the type and size of units being made by the company. Formerly, he said, major condensing unit production was in smaller sizes, for use in ice cream and dairy industries, water coolers, display cases and the like. Today the trend is toward the larger units used in cold storage—quick freeze, walk-in coolers, industrial applications, air conditioning, locker plants and farm freezers.

Bulk of the requirement at present is for 3 and 5 H.P. units; cold storage and air conditioning sizes range from 5 to 30 H.P. The manufacture of room coolers in 3, 5, 7½ and 10 H.P. sizes will be resumed, Mr. Brunner said, in cooperation with another Utica, N.Y. manufacturer.

● **Air Conditioning's Future.** The air conditioning industry should do from one to one and one-half billion dollars worth of business over the next five years, in addition to a replacement market estimated at $350 million. This prediction is made by S. M. Ahmed, economist of Hirsch & Co., member of the New York Stock Exchange, following a comprehensive survey of the air conditioning and refrigeration industry.

The study shows that in the three pre-war years, 1939-1941, number of residential installations increased 114%, commercial 118%, and industrial 143%. By comparison, the study asserts, air conditioning has gone farther in the ten pre-war years than refrigerators, radios, washers, electric ranges and automobiles went during their comparable period of growth.

The potential market is huge. Less than 1% of homes valued at over $12,000 have cooling units installed. Only 3% of department stores, 3% of doctors' and dentists' offices, 2% of banks, 2% of drug stores, 6% of restaurants, 4% of beauty and barber shops and 5% of hotels are air conditioned. Many other markets have been barely tapped.

Factors which should be favorable to the industry's growth, the study says, include: (1) the public is becoming more air conditioning minded; (2) sales are self-expanding, one sale leading to another through competition among users; (3) essentiality of conditioning has been established in both business and industrial processes; (4) improved equipment offers better performance at lower costs.

The rapid growth and prospects for large volume of peacetime business have enabled air conditioning to attain an important place among the nation's industries. The value of total installations before the war, according to Mr. Ahmed's estimates, exceeded one billion dollars. Investment in manufacturing facilities is put at $100 million.

Of the billion dollar business in the next five years, according to the study, commercial users for comfort purposes, such as restaurants, stores and offices, would account for 50 per cent, industrials for manufacturing purposes 25 per cent, residentials 13 per cent, and the balance equally divided among theaters, public buildings and railroads.

SUPERIOR CHECK VALVES—unique design, positive acting, spring-operated—cannot chatter, hum or buzz under any normal operating conditions. Pressure drop is negligible. Install one in the suction line of each low temperature circuit of all low temperature jobs—your assurance of maximum performance and trouble-free operation.

SUPERIOR LIQUID INDICATORS—call them liquid indicators, sight glasses, or refrigerant shortage detectors—one should be installed in the liquid line of each system. Seal cap over sight glass is double assurance against damage and leaks.

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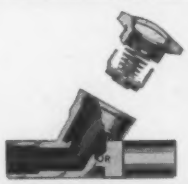
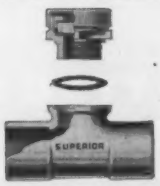


The novel design of these SUPERIOR Check Valves permits the easy removal of all internal parts—as a unit—while soldering lines to valve connections, or for subsequent inspection.



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No. 128

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Over the COUNTER

JIM: Now that the war is ended, I hope we'll be able to get hold of some good men to use in our business. We have worked short-handed for so long now that it's going to be a pleasure to get back to a normal operating basis one of these days before too long.

FRANK: *That's a funny thing—I've been thinking about that same thing myself lately, and at least two of our customers that I called on were crying their heads off because they were putting in so much overtime, and couldn't catch up on their work because of the shortage of manpower. However, when I stopped at Bill's place today, he gave me some information that may help all of us a lot in arriving at an early solution to this problem. Bill has had a terrible time keeping his repair shop going throughout the war, losing first one man and then another, either to the Draft or to war plants.*

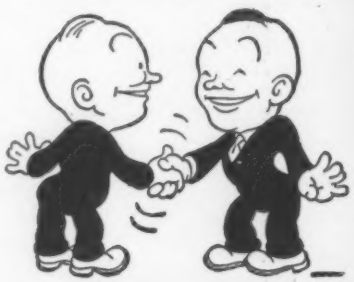
He's been able to hire some new men, but it's been a high turnover and a constant headache to him. He was telling me that just yesterday a man from the U. S. Veteran's Bureau called on him and talked to him about the prospects of using incapacitated war veterans in his shop activities. He explained that the government was making every possible effort and taking every possible step to place all incapacitated war veterans in useful occupations, and that it has laid out a program to handle this situation.

JIM: That might be a solution to our problem—but I'm afraid that most of the fellows that they would offer would be unable to do much work and not be much help to us in meeting this situation.

FRANK: *According to what Bill found out, where anyone hires these men, they are all placed in jobs in which their physical disability does not seriously handicap them in the activity they're assigned to. As Bill outlined this program to me, it works like this:*

Whenever a man is sufficiently restored to health so that he can begin to think of work and his future, he's sent to an examiner who questions him about his past work and experience and finds out what kind of work he did before he went into the service. Next the examiner finds out the veteran's interests as to future work. This helps him to determine whether or not the man's disability will enable him to perform such work satisfactorily.

JIM: That certainly sounds like a worthwhile effort on the part of the government to give disabled vet-



erans a break. However, I still am afraid it wouldn't help us very much if these fellows are in bad physical shape.

FRANK: *The point is that they don't try to place a man on a job that he is unable to do. In most instances, these men have proved to be valuable, hard-working, conscientious men once they are given an opportunity to get work in their chosen line.*

JIM: That sounds reasonable enough. It stands to reason that one of these men would work mighty hard to make a place for himself.

FRANK: *That's right. The reports coming in indicate that's just the way they feel about it.*

JIM: How about men who want to work in the refrigeration business?

FRANK: *When the men are questioned regarding the work they*

would like to do they all have an opportunity to express their interest. A surprising number of men have reported that they are interested in the refrigeration industry as a future activity. It seems as though they heard a lot about the great future possibilities in refrigeration work while they were in the service, and I guess they had a good many opportunities to see some of the big refrigeration plants that were used here and overseas to keep food wholesome and fresh for our millions of fighting men.

JIM: What sort of arrangement is worked out to pay these fellows?

FRANK: *The government provides a fund which is paid to these incapacitated men for a period of time while they're learning to adjust themselves at work, or while they are learning a business if it happens to be a case where they are going into a new industry.*

JIM: If the government pays them to learn, does that relieve the fellow who hires these men from paying them wages?

FRANK: *Not altogether. They're paid a pretty reasonable compensation for a stated period, as I said before. However, the employer is expected to contribute to the ex-soldier's income by at least paying him the difference between what the government allows him and what would be regularly paid for the work.*

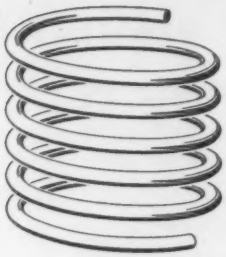
COAST JOBBER IN LARGER QUARTERS

Hinshaw Supply Co., refrigeration supplies jobber, has recently moved into remodeled and larger quarters at 1208 Howard St., San Francisco. The new building houses offices and warehouse of the company, which began its business career in Sacramento 12 years ago and has maintained a San Francisco office for the past six years. Head of the company is R. L. Hinshaw.

BUFFALO NORGE DISTRIBUTOR EXPANDS

Bergman Norge Co., of Buffalo, distributor for Norge appliances in the western New York and northern Pennsylvania area, has acquired a new building at 94-96 Elm St. to house its showrooms, offices and parts department.

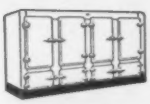
Q. Why is ZEROCEL like a spring?



A. It won't settle!

ONE reason why Zerocel's your best insulation buy is because it's resilient. As proved by tests made by Pittsburgh Testing Laboratory, it just won't settle, even under severe vibration. In addition, inch for inch, Zerocel is one of the most efficient insulators on the market, having a conductivity or "K" factor of 0.24 Btu at 60° F. mean temperature. Because of its low cost, Zerocel may be installed much thicker for the same or less money, reducing the refrigeration load and the size of the compressor needed.

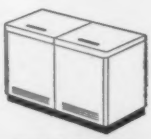
And Zerocel is fireproof (important when placing fire insurance), waterproof (shows only surface wetting even when submerged in water) and inorganic (will not harbor vermin, absorb odors or decay). For better insulation at lower cost, insist on Gold Bond Zerocel Rock Wool Insulation.



CABINETS

STORAGE

LOCKERS



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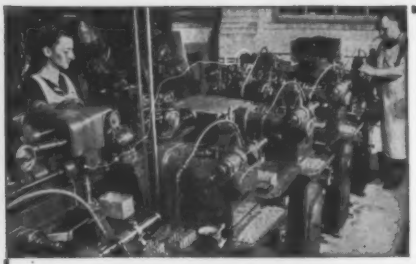
How a Gauge Cuts its *Wisdom Teeth*

ONE OF THE REASONS 6 OUT OF 10 PICK U. S. GAUGES



CRITICAL STEP IN FAST, ACCURATE GAUGE MAKING

The teeth of a gauge are a direct measure of its truthfulness. Teeth in the segments of U. S. Gauges are generated on automatic hobbing machines, dozens of segments at one time. To check radius and profile, teeth are magnified 100 times and examined in a special projector.

WHY 6 OUT OF 10 CHOOSE U. S. GAUGE

You can credit *Manufacturing Control* for precision in the thousands of commercial gauges turned out daily by U. S. Gauge. Manufacturing Control keeps an eagle eye on raw materials, manufacturing, assembly, calibration, testing and inspection and many of the exclusive steps in U. S. Gaugemaking. That's why 6 out of 10 who buy gauges say "U. S. Gauge."

U.S. Gauges

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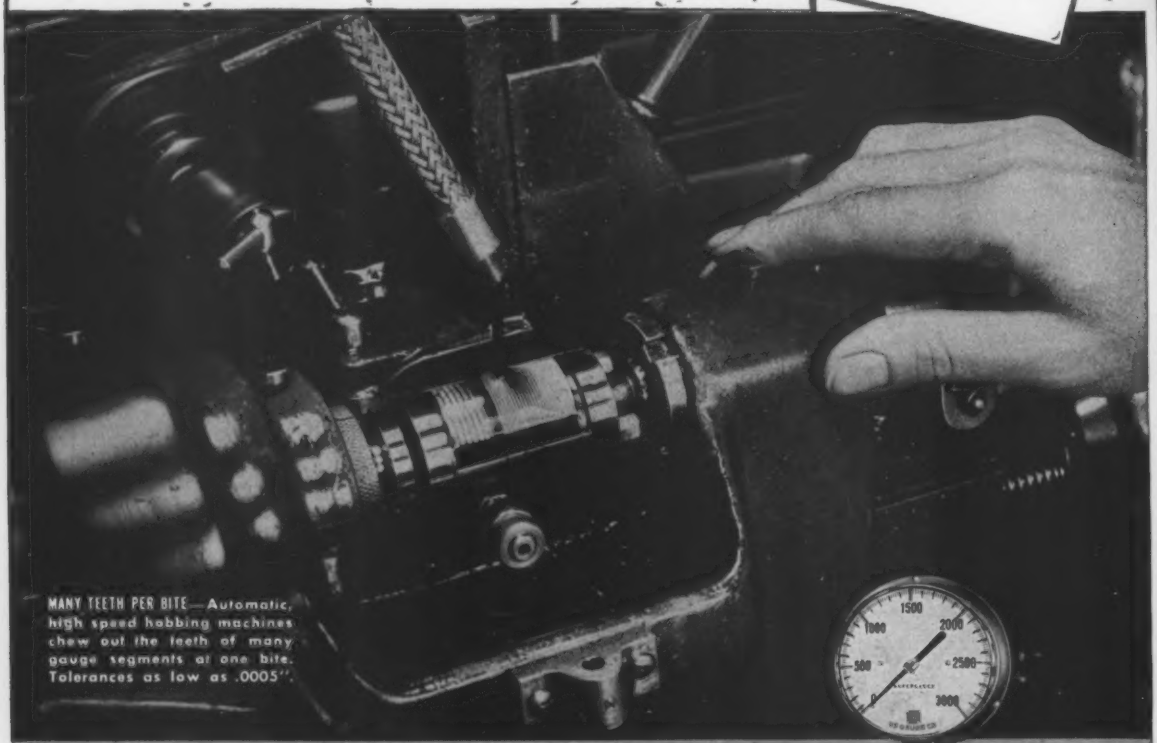

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U. S. INSTRUMENTS Tell The Truth

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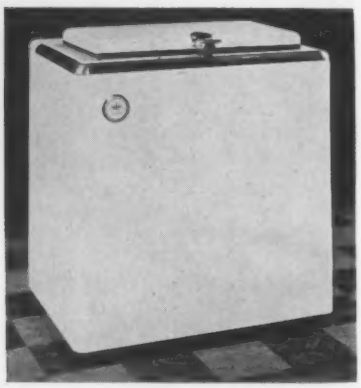
Home Freezer Cabinet

Frigidaire has announced the first of its contemplated home freezers, a 4 cu. ft. cabinet or horizontal model. This cabinet is in a finish of white baked enamel.

Outer dimensions of the cabinet are: height, 36″ to the top of the cabinet; length, 34½″; and width,



24″. Storage space is 12⅜″ wide by 24 5/16″ long by 23″ deep, giving slightly more than 4 cu. ft. of storage space in the cabinet. Total weight of the freezer is 250 lbs. and it is operated by a "Meter-Miser" unit of ⅓ H.P.

Officials of Frigidaire believe that this and other freezers planned for future production will be available to the public shortly after Jan. 1. Present plans call for an 8 cu. ft. cabinet model, an upright model, with a capacity of 5.1 cu. ft., and a "Super-Freeze" chest in the deluxe Frigidaire refrigerator, in addition to the 4 cu. ft. model.

Pipe Caps and Plugs

Utilizing a new stamping method developed for precise high-speed war production, which is said to enable them to produce many types of threaded small parts at a fraction of former costs, a new line of protection pipe caps and pipe plugs is now being manufactured by Tubing Seal-Cap, Inc., Los Angeles.

Available at present are protecting pipe plugs and caps with NPT threads in sizes up to 1″ fabricated from steel or aluminum. Larger sizes are soon to be available. Other threaded parts will be made to specifications.

Steel Shop Stools

Steel stools, available in five heights and 80 models, which have a diversity of industrial and commercial uses, are now being marketed by Lyon Metal Products, Inc., Aurora, Ill.

The 26″ stool, No. 1226, equipped with an adjustable back and pressed wood seat (over steel) and steel feet, is priced at $2.85. The back support may be attached to all models. Features of this stool include all-welded, non-breakable construction; 14″ wide seat, with rounded corners; channel brace which provides a comfortable foot rest located at a uniform distance below the seat from all heights; steel glide type feet, and pressed wood seat applied over steel.

Parts Cleaning Machine

A new portable type parts cleaning machine, which agitates the cleaning fluid by air pressure, has been announced by the Park Chemical Co.,

Detroit. No heat is required in this unit to remove grease, grime and carbon from machined parts, castings, gears, electrical parts, instruments, tools, etc., it is claimed.

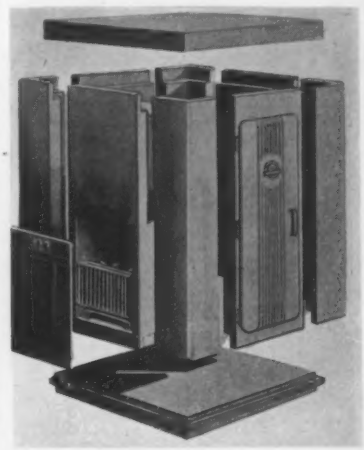
Two systems of cleaning are combined in the one unit. Large parts are placed in the tank and the cleaning solution is agitated by means of air pressure. The air is dispelled from a series of holes in a pipe which runs lengthwise at the bottom of the tank.

Small parts such as screws, washers, etc., are placed in the round basket and soaked in the solution for a few minutes. After the parts have been cleaned, the rack is placed on an attached drain-shelf which drains the solution back into the tank for re-use. Parts are then blown dry by means of the air gun and rinsed with water or petroleum spirits.

Unit is 36 inches high, tank depth 18 inches, tank length 35 inches, and tank width 17 inches. Included as standard equipment are the basket, metal rack for the bottom of the tank, air agitator and air gun with 5 feet of hose. "Tank-Solv", a new cleaning solution, has been compounded especially for use with the machine.

"Expandable" Walk-In Unit

A new "expandable" walk-in freezer unit has recently been announced by Refrigeration Corp. of America, New York City. By use of



this unit, the company claims, the buyer of frozen foods can pace his storage space with his sales, starting with a basic unit and adding sections to it as sales climb, eliminating unnecessary waste of space and power.

Simplicity of construction is a feature claimed for the unit; to start the freezing unit, which consists of a compressor and a freezing coil, self-contained, it is necessary only to plug into a 110-220 volt electrical circuit. The entire unit is designed to be re-

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placed in the event of mechanical trouble. Only six bolts need be loosened to remove the unit, it is claimed.

Other features, besides the self-contained freezer unit, include the "zero sentinel," a double-alarm system of light and sound design to give advance warning of temperatures injurious to foods; an automatic defroster, and the "freeztrol," a low-temperature modulator designed to permit exact temperature adjustment and to control air circulation inside the cabinet.

To simplify installation of the initial unit, the company has developed a miniature scale model to serve as a guide. By first erecting this model on a table, the step-by-step installation and assembly procedure is quickly grasped.

Appliance Hardware

Titan Metal Mfg. Co., Bellefonte, Pa., a pioneer of brass pressure die-castings in this country, is expanding its line of die-castings for the appliance and hardware trades.

Although Titan now has facilities for producing brass pressure die-castings weighing up to 11 pounds, the firm has not yet applied pressure die-casting for the production of parts weighing more than 4 pounds. Technical literature indicating what kinds of parts can be die-cast from brass will be sent to those interested upon request.

Electric Soldering Irons

A new "Hy-Temp" electric soldering iron has recently been marketed by Hydra-Aire appliance division, Los Angeles. Prices range from $7.20 for the 100-watt unit to $11.50 for the 300-watt unit.

Features of the new units include: nichrome wire wound on pure copper or brass core, instead of a hollow steel tube; head of pure brass for more positive and continuous conductivity; tip of pure soft copper, threaded, for positive and continuous contact with head and core; element lead wires soldered to plug cord wires, instead of having the union held with screws; outer shell, cooling fins and spacers plated for heat insulation.

Low Temperature Cabinet

Authorized Refrigeration, Hollywood, Calif., has marketed a low temperature unit under the trade-name "Arctic-Temp." Carrying an f.o.b. price of $675, the unit is said to have a storage capacity of 1000 lbs., and to be adaptable to a temperature range of plus 38°F. to minus 40°F.

Cubic capacity of the unit is set at 19.6 cu. ft. Power is supplied by a ⅓ H.P. refrigerating unit, using Freon. Five inches of fiber glass is used as insulation. Front is of stainless steel, sides of Murolite, to assure long wear. Freezing coils run through shelves for rapid temperature pull-down. Dimensions are 56 in. high, 46 in. wide, and 31½ in. deep.

Units are available for immediate delivery, according to Michael Colin, president of the company.

Assembly and Repair Tools

Jo Mfg. Co., South Gate, Calif., has announced that it has two new tools available to manufacturers reconverting to refrigerator production. The company manufacturers tools for precision aircraft assembly and repair work.

One tool, called the "Jotee," is a ratchet type torque wrench, made of solid aluminum, and is preset at the factory to any torques within a range of 5 to 40 in./lbs., but may be reset in the plant tool room whenever assembly specifications change.

The other tool, called the "Joel," has the same range as the "Jotee," and is said to be especially adaptable to close assembly work. This tool is made in both the ratcheting and non-ratcheting type.

Direct-Drive Compressors

Details of its new direct-drive, motor-speed commercial refrigeration compressors have been announced by Mills Industries, Inc.

Initial tooling will produce twin cylinder units in the ¼ and ⅓ H. P. sizes. The second stage will step up to ½ and ¾ H. P., and final plans call for production in sizes ranging from single cylinder 1/12 H. P., to six cylinders 5 H. P. Standardization of precision parts will make possible the use of modern mass production techniques in the production and assembly of these units.

Belts, flywheels, and pulleys are eliminated. Weight is greatly reduced; and the cubic footage of space required for installation in self-contained fixtures is about one-half of the present requirement for standard

belted units, it was said.

For example, a standard ⅓ H. P. unit weighs about 120 lbs. and requires over 3 cu. ft. of space. Mills direct-drive units weighs only 72 lbs. and will occupy 1.4 cu. ft. of space, the company claims.

Units are designed to be easy to inspect and service, to run more quietly than the conventional units they replace, and to have longer life, the last two features resulting from a new type pressure lubrication system. The oil pump is a precision machined spiral groove cut around the main bearing. This develops an oil pressure of 30 lbs. per sq. in. which delivers oil at the rate of 2 oz. per minute to all parts requiring lubrication.

The direct-drive compressor is driven by an electric motor which is assembled directly into the compressor casting with the motor rotor mounted on the compressor shaft. The speed is the same as the speed of the motor—1.750 r.p.m., approximately four times as fast as the standard belted type of condensing units. Cylinders are only one-fourth as large as old-type units of the same capacity, making piston speeds approximately the same as conventional units.

Newest wrinkle in frozen food merchandising is coin-operated vending machines. To date Marshall Field & Co. and Wieboldt, Inc., Chicago department stores, and Libby, McNeill & Libby, Chicago food manufacturer and distributor, have acknowledged that they plan extensive selling of frozen foods either by self-service freezer units or coin-operated vending machines, or both.

One advantage claimed for coin-operated units is the saving in space by the display machine and the saving of store personnel's time.

Other features include a new shaft seal which is said to give as dependable performance at motor speed as the present seals give with conventional speed units. Replaceable cylinder sleeves are said to make for easier assembly techniques. The cylinder sleeves also aid in standardization by giving a choice of piston sizes for each cylinder block.

A new type of unloading valve, adding no extra parts, is said to permit the compressor to start under adverse conditions of suction and head pressure, and also to enable the use of the unit with any conventional type of low side refrigerant flow control.

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Milling Attachment for Lathe

Save time, do milling jobs on lathe. Increase volume. Adaptable for South Bend, Atlas, Craftsman, Sheldon, etc. Graduated vertical feed screw and 360° graduation for vertical angle adjustments. Mounts by straddling regular tool post. No. 150 has 1½" jaws, 1" deep $16.75. No. 250 has 2½" jaws, 1-7/16" deep, grooved and plain. Price $24.75. No. 400 has 4" jaws, 1¼" deep $39.75.

IMMEDIATE DELIVERY! Write for Circular 105 and Jobber Helps

CHICAGO TOOL AND ENGINEERING CO.

Mfrs. of PALMGREN PRODUCTS for over 25 years.

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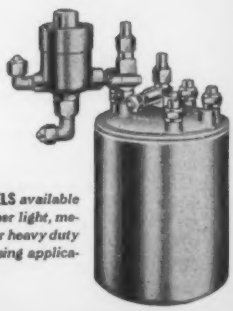
NOW.. STAINLESS STEEL COILS THROUGHOUT

The Latest TEMPRITE Soda Fountain And Beverage Coolers are Better Than Ever

HIGHLY CORROSION-RESISTANT stainless steel coils are now used *throughout* the famous Temprite Soda Fountain and Beverage Coolers.

STAINLESS STEEL assures you a long-lasting, trouble-free unit plus all the additional Temprite advantages, such as perfect temperature control, instantaneous cooling and compact size. These advantages are made possible by Temprite's patented instantaneous cooling principle and constant pressure control valve.

TEMPRITE COOLERS conserve valuable space and the liquid is cooled only as used and at the rate required. Either 1, 2 or 3 carbonated or non-carbonated beverages can be dispensed with each cooler. *Recommended for either new or existing installations.* Write our Sales Department today for details.



6 MODELS *available for either light, medium or heavy duty dispensing applications.*

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Originators of Instantaneous Liquid Cooling Devices

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Use the
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SLEEVE SEAL
That has been
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INDIVIDUAL
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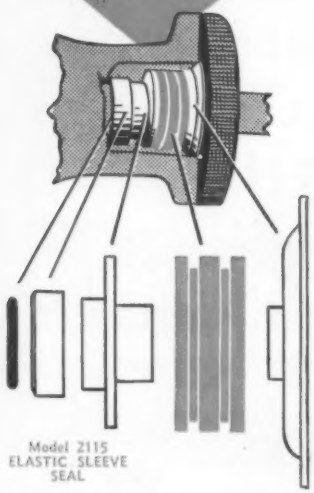

Model 2115
ELASTIC SLEEVE
SEAL

Write for Folders and Prices

You can readily see how easy it is to install the new, simplified ELASTIC SLEEVE SEAL on worn, bent, or pitted shafts. This same principle of application can now be applied to any rotating shaft inasmuch as ELASTIC SLEEVE SEALS are now available for all standard replacements and for new applications. The "Seal of Approval" has been faithfully engineered for lasting service. Write for specific information.

No Fuss No Muss No Cuss

TEMPERATURE Control Devices
NEW HAVEN 15, CONNECTICUT

The MARKET Place

RATES: minimum, 25 words, $2.00; each additional word, 10c. Bold type or all capitals: minimum, 25 words, $3.00, additional words, 15c. All insertions are payable in advance.

"I WANT A JOB"

VETERAN DISCHARGED 9/11/45, good health, high school graduate, wishes electric refrigeration repair and air conditioning installation and repair apprentice training. Prefers West Va., willing to go anywhere. Wants to work under first-class engineers. Would like location where night schools are available. Box 145-N, Refrigeration Industry.

HELP WANTED

COMMERCIAL REFRIGERATION service man. Exceptional opportunity, permanent position. Hourly rate plus commission, car allowance and profit-sharing arrangement. Must have ability and experience in servicing industrial, commercial and air conditioning equipment. We are a well-established firm located in northern Ohio. Box 8452, Refrigeration Industry.

SERVICE MANAGER with ability to organize service department and train men for organization engaged in domestic and commercial refrigeration, covering 17 Northern Ohio counties. Ample facilities to create outstanding department. State full particulars and salary requirements in first letter. Box 8453 Refrigeration Industry.

REFRIGERATION serviceman with ability to service domestic and commercial equipment. Established firm with Frigidaire agency. Write salary expected and experience. Hugh R. Etter Electric, 921 Broadway, Plainview, Texas.

REFRIGERATION Service Man, experienced on Ice Cream Cabinets and Soda Fountains. Philadelphia Territory. Give Past experience. Box No. 1152.

ESTABLISHED Cincinnati, Ohio Company representing a nationally known equipment manufacturer is in need of an engineer with not less than five (5) years current experience in layout, design and estimating Air Conditioning Systems. Give full history of your experience, salary expected, and availability in letter. *Confidential.* Box 1153. The Refrigeration Industry.

SITUATION WANTED

OPPORTUNITY with established concern as service manager, field service representative or similar. Northwest preferred. Consider moderate travel. Employed for duration plus as government refrigeration service engineer. Member RSES. References. No capital. Box 1151. Refrigeration Industry.

DOMESTIC refrigerator mechanic would like to contact large commercial and industrial refrigerator company to learn that business. A. Merola, 26 N.W. S. River Drive, Miami, Florida.

FOR SALE

FOR SALE—12 - 16 and 24 cubic ft. freezer cabinets. Write for list and prices. Rathbun Refrigeration Company, 1675 Lake Drive, Grand Rapids 6, Michigan.

For Sale. Remanufactured air and water-cooled condensing units ¾ H.P. up to 1½ H.P. Frosted Food & Ice Cream Cabinets. Edison Cooling Corp., 310 East 149th St., New York 51, N. Y.

ACETYLENE Welding Outfits like new; Arcwelders, Acetylene Generators, Flame Cutting Machines, Eagle Welding, Dept. 28, 5085 Broadway, Chicago 40, Ill.

ENAMEL INSTITUTE FORUM IS RESUMED

The Porcelain Enamel Institute has announced that following a lapse of four years its Forum is to be resumed. It will be held this year at Ohio State University, Columbus, Nov. 28, 29 and 30. The three-day meeting will be built around the idea of providing a "refresher" course, stressing the fundamentals of enameling techniques.

AUTOMATIC WINDOW CLOSER

Worry about rain ruining the living room rugs or curtains can be eliminated by an electrical device, scheduled for early production, which opens and closes windows thermostatically. Thus, if the night is hot and there are threatening clouds, it will be safe to leave the house. If the storm strikes, the accompanying drop in temperature will cause the windows to close.

EVANSVILLE SEEGER PLANT IN PRODUCTION

Production of refrigerators at the Evansville, Ind., plant of Seeger-Sunbeam Corp. is now underway, announces Arthur J. Lowell, vice president and local plant manager.

A month earlier production was started at the St. Paul, Minn. plant of the company.

Among the new improvements to be incorporated in manufacturing methods, declared Mr. Lowell, is the chromium plating of cutting tools to lengthen their life. It was indicated that this plating method may also be applied to some refrigerator parts. The company is also experimenting with plating of worn parts.

"WHEN A JOB CALLS FOR MORE THAN ONE EVAPORATOR ON A SINGLE UNIT . . . .

I call for an AP MODEL 235 Suction Pressure Valve . . . It's a good feeling to know what a Valve can do . . . *and I know!* . . ."

THAT is the comment from a Refrigeration Service Engineer when we asked him regarding his personal experience with "A-P" Valves.

Confidence like this is based on practical, day-in day-out experience in maintaining the nation's refrigerating machinery in spite of today's difficulties and handicaps. It is a trust shared by a widespread army of refrigeration service engineers who know that dependable "A-P" Controls, Valves, and Solenoids save them time-wasting call-backs — insure *customer satisfaction.*

AP has cracked some hard nuts in the way of refrigeration servicing problems. Always feel free to consult us about yours!

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DEPENDABLE *Refrigerant Valves*

STOCKED AND SOLD BY REFRIGERATION JOBBERS EVERYWHERE . . . USED AND RECOMMENDED BY REFRIGERATION SERVICE ENGINEERS

All in favor raise right hands . . . *with wallets*

Naturally we want our boys home. The sooner the better.

But how much are we willing to do about it?

Are we willing to pay for bringing them back? If we are, we'll buy *extra* Bonds in the Victory Loan.

And after these fellows get home—these men who have fought and won the toughest war America has ever known—what then?

We want to take care of the injured ones, of course. We want to see that the young fellows who went off to fight get a chance to finish their education. We want to see that there are jobs—plenty of decent jobs—for the men who've been doing the world's meanest job at army pay.

How much are we willing to do about that?

If we're really serious about wanting to see that our men get what they have so richly earned, we'll buy *extra* Bonds in the Victory Loan.

Now's the time. Let's have a show of hands—with wallets—to prove how much we really want to hear that old familiar step and that familiar voice yelling "It's *me!*" Let's prove, with pocketbooks, that we can do our job as well as they did theirs.

THEY FINISHED THEIR JOB—
LET'S FINISH OURS!

THE REFRIGERATION INDUSTRY

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